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CLEAN AIR

AND ENVIRONMENTAL PROTECTION

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NATIONAL SOCIETY FOR CLEAN AIR
AND ENVIRONMENTAL PROTECTION

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EDITORIAL

THE PARTY'S OVER

At first sight, the environment did not have a good election. Given the parlous state of the economy the general reticence on environmental issues was perhaps understandable. Although there are many areas where environmental improvement and economic gain go hand in hand, there are others where the transition to sustainable growth could be painful.

The last Conservative administration laid the foundations for environmental protection in key areas. They must now weave the thread of environment into the cloth of United Kingdom economy and society, and sew the UK cloth into the European and then the world garment. To achieve sustainable growth it will be necessary to trace threats to the environment back much further into the economy and society so that they can be solved much closer to their roots. This principle is recognised in the 5th European Community Action Programme and the Government must lead this programme forward during its Presidency of the Commission as well as meeting challenges at home in the key areas of the Action Programme as follows:

- **Industry** — bring the promise of the Environmental Protection Act to fruition with consequent benefit to the environment, the economy and communities.
- **Energy** — secure an economic, technical and regulatory framework which delivers significant gains in energy efficiency.
- **Transport** — introduce a balanced package of measures which will improve the efficiency of transport in the short-term and reduce demand for it in future.
- **Agriculture** — enable and require farmers and landowners to maintain viability whilst reducing the environmental impact of their activities.

New arrangements and attitudes will be needed. There are foundations to build on and new ground to break. Central Government departments are now accountable for the environmental dimension of their activities. This trend must be strengthened and extended. Subsidiarity, the principle that policy formulation and administration should be at the lowest level appropriate, must replace centralisation. That said there is need for an authoritative overview of the environment. Proposals for Environmental Agencies, rushed out before the election, must be reexamined. An Agency is vital but it should have a wide remit and much more thought is necessary about how it should influence the network of environmental decision and control.

The environmental party that we all enjoyed in the 1980s is over. The real work lies ahead, in Rio and in Brussels, in Whitehall and in town hall, in factory and in community. Even the environmental pressure groups will have to learn new tricks and assume new responsibilities.

NSCA VIEWS

ENVIRONMENT PROTECTION AGENCY

In October 1991 the Conservative Government published its proposals for a new independent Environment Agency for England and Wales. Proposals for a similar Agency for Scotland were subsequently published by the Scottish Office. Both sets of proposals stem from the Government's intention stated in its White Paper, *This Common Inheritance* (1990), that steps should be taken to strengthen institutional arrangements for environmental protection and management. In this issue of *Clean Air* we briefly summarise the proposals and our response to them. The comments on the proposals for the Scottish Agency were prepared by the NSCA's Scottish Division. The NSCA's comments were finalised in January 1992 and the Scottish Division's in March 1992.

IMPROVING ENVIRONMENTAL QUALITY: THE GOVERNMENT'S PROPOSALS FOR A NEW INDEPENDENT ENVIRONMENT AGENCY (ENGLAND AND WALES)

While the precise role and functions of the proposed Agency have still to be worked out, in proposing four options for the Agency, the paper also outlines four considerations which would be taken into account in whatever model is chosen. These are:

- the Agency would assume responsibility for day-to-day decisions on the regulatory functions it takes over with all rights of appeal to Ministers over decisions relating to authorisations etc being maintained;
- the Agency would be responsible for advising on and proposing environmental quality standards and for their enforcement;
- the Agency would be responsible for environmental monitoring;
- through its various functions, the Agency would be expected to promulgate advice on best practice.

The Government wishes to create a strong regulatory pollution control body and to this end puts forward four options for how the Agency might be constituted:

- to combine the functions of HMIP and waste regulation; HMIP's responsibilities for discharges to water under IPC would be transferred to the NRA;
- to create an umbrella body to oversee and coordinate the work of both the NRA and HMIP. HMIP or a separate part of the new body to deal with waste regulation;

- to create a fully integrated Agency covering HMIP, the whole of the NRA and waste regulation;
- to combine HMIP, waste regulation and the NRA's pollution control responsibilities.

All options envisage transferring the Drinking Water Inspectorate to the Agency and making the Agency responsible for providing advice to the Government on certain environmental aspects of major accidents in the context of the Control of Industrial Major Accident Hazards Regulations.

NSCA COMMENTS

1. Introduction

a. NSCA policy has long called for the establishment of an independent Environmental Protection Agency. We note that all three major political parties are now committed to the concept although their views on the responsibilities and operating methods for an Environmental Agency (EA) differ. We welcome Government's recognition of the need for improvements, but have reservations on the adequacy of present proposals.

b. We have identified three principles against which the proposals should be judged. First, that there should be a clear role for an EA which is not currently being fulfilled satisfactorily. Second, that any change will lead to an increase in the effectiveness of environmental protection. Third, subsidiarity, which in this context means that environmental responsibilities should fall to those best placed — in terms of economy, efficiency, effectiveness and accountability — to undertake them. Where existing functions are currently undertaken in a satisfactory manner there will be no advantage in change for its own sake.

What Is The Role For An EA?

c. There is much more to environmental protection than simply pollution control. It involves three processes: agreement on priorities for environmental protection; reconciliation of environmental impacts with these agreed priorities; environmental monitoring and enforcement of the necessary measures. It is tempting to draw a clear distinction between the three activities as the responsibilities of, respectively, politicians ("Government"); those responsible for environmental impacts ("polluters"); and the agencies of enforcement ("regulators").

d. Unfortunately such a simple demarcation is unrealistic. Firstly, although priorities are determined by Government there is a need for an objective assessment of environmental policy options which informs public debate and the political process. Secondly, the "polluters" responsible for environmental impact are not always identifiable and do not always fall into the existing control framework. Thirdly, the effectiveness of enforcement by regulators demands objective review. There is also a need to reconcile national and local issues. Moreover if the economic resources available for environmental improvement are to be used optimally we must achieve a balance, not only between environmental media, but also between information,

incentive and penalty in pursuit of rapid and effective improvement. It is in these areas that we perceive a role, not currently fulfilled, for professional involvement in translating policy into practical action and evaluating the consequences of intervention.

2. The Government Proposals

a. Essentially the Government proposals are to transfer waste regulation responsibility from local authorities to the EA, and evaluate four alternative methods of dividing the current pollution control responsibilities of HMIP and NRA. They focus on narrow questions of pollution control enforcement, rather than a wider consideration of the factors influencing environmental quality.

Has The Case Been Made?

b. Para 1 of the Consultation Paper states that the Government has decided *". . .to bring together the key regulatory pollution control functions affecting the different media (air, land and water). . .".* Yet the proposals relate only to the regulation of certain aspects of waste disposal, air pollution and water pollution, mainly from industrial processes in England and Wales. The exclusion of major areas of pollution control and environmental protection — for example energy, transport, agriculture and fiscal policy — represent fundamental omissions, any of which could negate the benefits of actions within the remit of a narrowly based Agency.

c. Furthermore the proposals are not national, since they exclude Scotland and Northern Ireland; parallel plans for Scotland propose the removal of all local authority responsibility for air pollution and waste regulation to an EPA which includes the Scottish Pollution Inspectorate and River Purification Boards. Such arrangements would only serve to exacerbate the inconsistencies between regulation north and south of the border.

d. Paras 13-17 of the Consultation Paper outline the reasons for proposing change. Firstly there are *"problems of overlap"* between HMIP and NRA. This is inevitable given the differing perspectives of the two agencies; HMIP looking down the discharge pipe from the factory, NRA looking up the discharge pipe from the river. HMIP takes an integrated view of the industrial process, NRA takes an integrated view of river basin management. The paper acknowledges that *"suitable administrative arrangements"* have already been made to minimise potential areas of overlap. The proposals give no indication of how a merger would enhance co-ordination over and above that which could be achieved by improving the current memorandum of understanding between the two bodies; indeed any such merging could be at the expense of a dis-integration of approach, particularly if this involved breaking up the NRA. Industries operating Part A processes subject to Integrated Pollution Control will deal primarily with a single agency (currently HMIP); the proposals would hardly change this. Those industries running Part B processes subject to air pollution control by local authorities would remain so; the proposals do not alter this and any discussions with NRA about discharges to water would still be undertaken separately. Thus the claims for a simplified system for industry are not substantiated.

e. Secondly, the paper states that *". . .it is becoming more difficult for individual waste regulation authorities either to provide the necessary expertise, or to co-ordinate policies and standards over a wide enough area. . ."*. There is no doubt that historically, in some areas, the waste regulation function has been inadequately enforced by local authorities. This has changed. The Government is now introducing an improved framework under Part II of the *Environmental Protection Act 1990* which is only at the early stages of implementation. Given improved resources local authorities could continue to undertake this function.

f. We fully concur with the third concern, *". . .to ensure that decisions about pollution control take full account of the need to select the best practicable environmental option. . ."*. But the BPEO cannot solely be established at individual plant level; whether a sewage sludge incinerator, for instance, represents BPEO cannot be determined in isolation by a regulatory authority without considering the broader context of the BPEO for sewage disposal in relation to pollution, transport, energy, agriculture and other factors. It is at this level where the UK has a policy vacuum, and it is precisely at this level where we identify a role for a broad based EA. The Agency would provide independent objective advice to policymakers on environmental quality objectives and on the adjustment across traditional boundaries which would be required to secure them. This role will become more important with the EC requirement for environmental impact assessment of plans, programmes and policies.

g. The fourth concern is about gaps and lack of cohesion due to the *"lack of any central regulatory focus"* and gives, as a sole example, the lack of co-ordinated environmental monitoring. This may not reflect favourably upon the DOE, with whom such responsibility currently lies, but we concur that an EA would be well-placed to provide a focus to assess the balance of regulation, incentives and fiscal measures for optimising environmental protection.

h. Finally, the paper cites *". . .public concern about the different status of the existing agencies. . ."*. NSCA has no evidence of general public anxiety on this matter, but has consistently argued that HMIP should be accorded the same degree of independence of action which the NRA now enjoys. This could be achieved by means other than those proposed.

What Would The Proposals Achieve?

i. The four options outlined could, in various ways, prove to be counter-productive. The paper provides its own cogent arguments against the first three options and one is drawn to the conclusion that the Government favours the fourth; a combination of HMIP, waste regulation and the pollution control functions of the NRA. Yet the paper notes that this would occur *". . .at the expense of extending the framework of integrated river basin management. . ."* and it concludes that this would *". . .put a premium on devising effective liaison arrangements. . ."*.

j. Simply put, the proposal is to alter one relationship which is already developing *"effective liaison arrangements"* — that which exists between NRA and HMIP — in

order to break up the NRA and arrive at a new structure which still demands effective liaison arrangements. There is no sum reduction in the requirement for liaison, and the integrated approach of the NRA is lost in the process. Similarly, the NRA has developed effective liaison with waste regulation authorities in England and Wales. Taking these various responsibilities under one roof cannot of itself guarantee improved regulation. One large organisation is not intrinsically more efficient than several smaller ones; liaison must still occur, if not between different agencies, then between different departments of an EA. Even if a merger produced some marginal improvements in efficiency and communication, the costs noted above could outweigh any such benefits. Formidable communications problems must be surmounted if central control is to be more effective than pluralist autonomy.

k. We conclude that, judged on the basis of its own criteria, the paper has failed to establish the basis for an effective EA. We consider that the claimed advantages of combining elements of NRA and HMIP into one agency have been overstated. An unwelcome effect of the proposals is to create a further period of uncertainty for the staff of HMIP and NRA. They have emerged from a period of organisational change to face the substantial challenge of introducing IPC and more ambitious water quality objectives, both on tight timetables. Merging two organisations of differing size and nature also creates severe misgivings among staff. If important and well conceived initiatives are not to be put in jeopardy, by damage to staff morale, any proposals for organisational change will have to be more coherent and detailed than those currently on the table.

1. None of the four options outlined by the paper would meet NSCA's primary objectives of improving the structure of environmental protection and increasing the independence of action for regulators. In particular the models fail to offer *". . .the prospect of integrating pollution control in an evolutionary way. . ."*. The paper concedes that there may be other options worthy of consideration; below NSCA proposes a fifth option which we recommend as a prudent way forward.

3. A Fifth Option

a. When considering alternatives, one recurrent theme is the need to provide a more co-ordinated approach to environmental protection covering all aspects of environmental impact. Integrated Pollution Control calls for an EA which is integrated into a wider control framework. A second is the subsidiarity question; where, given plans for the reorganisation of local government, the various responsibilities for environmental protection should most appropriately lie.

b. Other countries have created independent EAs with a much broader remit than industrial pollution control. Examples include the Canadian Environmental Advisory Council; the Norwegian Pollution Control Council; the US Environmental Protection Agency. All are involved in regulation and advise their respective Governments, but have different responsibilities and approaches. None of these models is directly applicable to the UK; in order to avoid potentially expensive mistakes we should take the time to evaluate experience abroad before taking precipitate action.

The Health and Safety Executive Model

c. Many commentators have pointed to the structure of the Health and Safety Commission and Executive as an appropriate model. We find considerable merit in this approach. The underlying strength of such a body would be its independence. We believe that there is a high-level role for a Commission (EPC) in the assessment and review of national environmental policy and the strategy for its implementation. Advice from the Commission would be an important influence for Ministers when determining environmental policy. One particularly vital task for the EPC would be to produce a regular national environmental assessment. An executive (EPE) would be charged with oversight of the information, exhortation and enforcement necessary to secure rational environmental improvement, the research and monitoring needed to underpin it and the publication of quality assured data to maintain public confidence in open debate. Although the structure parallels that which has been successful in relation to health and safety the EPC would reflect a more complex partnership of central and local government, industry and the public.

d. We recommend that the Commission should be established almost immediately. The role of the Executive, and its interaction with, or assumption of, the roles of other agencies would be the first priority for the Commission to establish. The Commission would be able to base its decisions on more profound research and wider consultation than has preceded the current proposals.

e. The composition of the Commission should reflect its independence and provide a broad base of expertise; membership should include representatives of central and local government, industry, professional institutions, regulatory authorities, environmental groups, scientists and academics.

Roles For An Independent EA

f. Overall political responsibility for environmental policy will clearly remain a matter for Government. However an independent agency which puts the environment first in all its deliberations would provide a necessary backdrop against which political choices are made more explicit. The roles we identify include some of the strategic responsibilities of HMIP and NRA, but also a number of the executive environmental responsibilities of the DOE and other Government departments. The implication is that some responsibilities now held by Government Departments would be transferred to the EA, as would research agencies such as Warren Spring Laboratory. The Drinking Water Inspectorate, on the other hand, does not have a direct role in maintaining environmental quality and is less likely to be a candidate for inclusion. We also concur with some of the roles identified by the consultation paper. Irrespective of the structure agreed, the following roles demand an independent national agency:

— BPEO assessment of UK cross-sectoral issues (waste, energy, transport, planning, etc) to set policy guidelines for individual projects;

— advice to Government on environmental quality and pollution control standards coupled with a regular state of the environment report;

— oversight of environmental auditing standards and environmental performance of Government departments and regulatory bodies;

— assessment of national compliance with EC and UK legislation;

— monitoring and facilitating public access to environmental information;

— specialist advice in support of regulatory authorities;

— identify research priorities and commission research with the research councils and elsewhere;

— advice to Government on development of environmental taxation and permit systems;

— co-ordination of environmental monitoring and interpretation of the data to give an annual evaluation of the state of the UK environment as an open basis for policy;

— development of chemicals policy and risk assessment for chemicals and hazardous products;

— influencing and enforcing EC legislation;

A Local And Regional Role?

g. Government Departments, HMIP, NRA and other agencies all have a regional structure, although the boundaries differ. There is a good case for regional EA offices with regional fora to strengthen local partnership and accountability. However the question of the division of responsibility between a new EA and current regional or local agencies is largely contingent upon forthcoming plans for the reorganisation of local government. Local authorities have a variety of environmental control responsibilities and any plans for an EA must dovetail with the new structure of local government. Large single tier local authorities would be better equipped to provide the technical expertise both for waste regulation and for extending Integrated Pollution Control to Part B Processes. They would also be well placed to undertake local EA functions under voluntary service agreements.

h. We were disappointed, therefore, to note that the Royal Commission on Environmental Pollution anticipates the transfer of both waste regulation and air pollution control functions from local authorities to the EA. We consider this to be a premature judgement. With the future of local government still undecided, a decision now on the exact local and regional role for an EA would pre-empt the forthcoming wider discussion on the most appropriate location for environmental responsibilities under a new local government structure. This reinforces NSCA's case for setting up an Environmental Protection Commission as a preliminary measure. The division of responsibility between local authorities and an EPE could then be integrated with decisions on local government reorganisation.

4. Summary

a. Although NSCA favours the establishment of an independent EA we reluctantly

reject the options proposed in the Consultation Paper. There are three major reasons: the proposals are unlikely to result in a measurable improvement in environmental management; they ignore the complex interactions of environmental policy and thus fail to create an agency with a truly broad environmental perspective; they prematurely anticipate changes in local government structure which will in turn require a reappraisal of the distribution of responsibility for environmental control.

b. Whilst we applaud the Government's initiative in bringing forward proposals for an EA we regret that the haste with which they were produced is reflected in the narrowness of their aims. This consultation process represents a rare chance to make major adjustments to the structure of environmental protection and we would have welcomed proposals which were more far-sighted and imaginative. Rather then tinker with current responsibilities the Government should seize the opportunity to create an independent and authoritative voice at the heart of national environmental protection. The first step is to create an independent Environmental Protection Commission to evaluate the most appropriate structure for an EA. In the long term this is more likely to produce a durable and effective framework for environmental protection.

IMPROVING SCOTLAND'S ENVIRONMENT THE WAY FORWARD

In Scotland it is proposed that the new Scottish Environment Protection Agency (SEPA) would assume the pollution control responsibilities of HM Industrial Pollution Inspectorate, the Hazardous Waste Inspectorate, the River Purification Authorities and the district and island councils (including not only waste regulation but also control of Part B processes for air pollution). One of the main advantages of amalgamating pollution control responsibilities in a single Agency is seen as the benefit to industry in being able to deal with a single regulatory body.

The paper puts forward three main principles which underlie its proposals:

- the need to remove opportunities for overlap and potential conflict between the various regulatory agencies;
- wherever possible, to separate responsibility for regulation from operation;
- to facilitate access to the most modern and comprehensive range of specialist expertise and equipment capable of dealing with the increasingly complex control techniques.

NSCA SCOTTISH DIVISION COMMENTS

The proposal to establish a Scottish Environment Protection Agency is likely to receive support in principle across a wide spectrum, including central and local government, the River Purification Authorities (RPA), industry, and the general public. However, there is liable to be a difference of opinion regarding the extent of the role which the Agency should perform and the manner in which its duties should be carried out.

In the foreword to the paper the Secretary of State for Scotland explains his belief that there will be benefits for industry in being able to deal with a single organisation. He also refers to the striking improvements achieved by the existing regulatory agencies over the past 15 years or so.

Key Principles

1. Paragraphs 12, 13 and 14 of the consultation paper outline the three key principles which the Government believe should underpin any proposals to reform the present arrangements. The first principle, is said to be the need to remove any opportunities for overlap and potential conflict between different regulatory agencies. The paper concludes that any such difficulties could be more readily overcome if a single body were responsible for all authorisations for a particular plant. However, there would not appear to be a significant problem with overlap and conflict at the present time, and the consultation paper itself accepts that "in large measure this risk can be overcome by liaison between the agencies".

2. Although there may be some merit in separating waste regulation from that of operation, the consultation paper does not state that there has been conflict in the past and explains that the separation principle "is based on the inherent desirability of avoiding altogether the risk of such a situation arising". The case does not appear to have been made that conflict of interests has been a significant problem in the past.

3. It is accepted that the technical burden of applying the necessary expertise and equipment to handle control techniques may put pressure on resources of the existing regulatory bodies. However, it would appear possible to negate this difficulty without opting for the model of Scottish Environment Protection Agency (SEPA) which is proposed by the consultation paper. For example, other options for the structure of the Agency, which will be discussed later, are possible. In addition, the restructuring of Scottish local government is likely to lead to larger local authorities and regional groupings of authorities may be possible. The possibility of establishing local pollution co-ordinating groups, perhaps under an umbrella body is currently under discussion.

4. There would appear to be other key principles which should underpin the proposals to reform the present arrangements, which have not been identified by the consultation paper. These are, firstly, that there should be a clear role for the SEPA to undertake functions which are not currently being fulfilled satisfactorily; secondly, that any change will lead to an increase in the effectiveness of environmental protection; and thirdly, that environmental protection responsibilities should fall to those best placed — in terms of economy, efficiency, effectiveness and acountability — to undertake them. Where existing functions are currently undertaken in a satisfactory manner there will be no advantage in change for its own sake.
It would not appear that the model proposed for the SEPA in the consultation paper would meet these key principles.

Local Participation and Accountability

5. In paragraph 20 of the paper the Government acknowledge its proposals may raise

concerns about local accountability, and this has been the case. Public perception of some central government agencies is of remote and faceless bureaucracy, which lack the resources to adequately enforce legislation and ignore, or are simply unaware, of local opinion.

The consultation paper suggests that SEPA might set up a regional advisory committee structure in order to provide for local involvement and participation. However, if this was merely an advisory body then it may be seen as a "talking shop" and local people may still feel that their views were not being heeded.

6. A further perceived difficulty with the creation of relatively remote regional offices of the Agency would be reduced responsiveness to complaints and less direct accessibility for local people. The possible relationship between the proposed Agency and local authorities remains unclear.

7. The consultation paper, while recognising that SEPA would require to be sensitive and respond to local needs, does not detail in any convincing way how it would achieve local accountability. This appears to be a fundamental flaw in the proposals. The Agency could never acquire the same degree of local knowledge of the environment, trade and industry, as local authorities were able to acquire.

8. It proposed that SEPA will incorporate the role of the Hazardous Waste Inspectorate, one of whose principal functions is to monitor and regulate the work done by local authorities in connection with waste regulation. Who then will regulate SEPA's activities in this area?

Staffing and Funding

9. In terms of staffing it is stated that SEPA is likely to employ over 500 staff. River Purification Authorities, with well over 300 staff, will form the largest element of the Agency. The remainder of the Agency will comprise approximately 200 staff, drawn from Her Majesty's Industrial Pollution Inspectorate and the Hazardous Waste Inspectorate (around 18 staff) and local authority staff currently engaged in waste regulation and air pollution control functions. A particularly difficult issue is likely to be the identification of relevant regulatory local government staff to which transfer terms would apply. Such a transfer is also likely to have an effect on revenue support grants to local authorities and again this issue would require to be addressed.

10. An indication of staff numbers within environmental health departments, and the proportion of time which professional staff spend on environmental health, including pollution control, functions is contained in the 1990 *Environmental Health Handbook for Scotland.* However, the information is of a fairly general nature and discussions with individual local authorities will be necessary before any detailed assessment can be made.

11. It is suggested in the paper (paragraph 54) that only 15 professional officers would be required to deal with the estimated 1200 prescribed processes specified in regulations as requiring authorisation as Part B processes in terms of the local authority air pollution control system. This estimate would appear to be wholly inadequate,

given the amount of work involved for local authorities in setting up and maintaining this new regulatory function. There must therefore be a question mark about the proposed staffing of the new Agency.

12. There is little detail in the consultation paper on the levels of funding to be given to the SEPA. However, the paper makes it clear that the creation of SEPA will require a re-allocation of resources from local government in respect of the functions of the River Purification Boards, the waste and air regulation functions of the District and Islands Councils, and the River Purification Authority functions of the Islands Councils. There will obviously be a net reduction in revenue support grant to local authorities in connection with these functions.

The Transition to SEPA

13. The paper makes it clear that the momentum of the existing Agencies ongoing work must be maintained. Although this is obviously most desirable, there may be a reluctance on the part of some local authorities to commit adequate resources to the local authority air pollution control system in particular, given that the responsibility for this function may be transferred to SEPA in due course.

Waste Regulation

14. It is indicated in the consultation paper (paragraph 49) that some respondents to the Government consultation paper on "The Role and Function of Waste Disposal Authorities" favoured the transfer of the waste regulation function to a larger authority. Although there may be some merit in this suggestion, the transfer of this function to the SEPA is not the only option. The formation of groupings of local authorities would be another possibility, and the proposed local government reorganisation in Scotland is also liable to lead to larger local authorities.

15. The consultation paper does not address in any detail the precise relationship and interaction which the Agency would have with the environmental health and planning responsibilities which will be retained by local government.

16. The consultation paper (in paragraph 53) invites views on the production of waste disposal plans and the timing of the introduction of the new waste licensing powers.

    Although there may well be a role to be played by SEPA in strategic waste disposal planning, there would appear to be a need for continued involvement of local authorities in waste disposal planning for individual authorities. The paper makes it clear that it is intended that the District and Island Councils will continue to exercise control as planning authorities over the location of waste disposal facilities, such as transfer stations and landfill sites. This could create a potential for conflict between the SEPA and local authorities.

17. It was previously intended that the introduction of the new waste licensing powers contained in Part II of the *Environmental Protection Act 1990* would be given to local authorities with effect from 1 April 1993. These additional powers have been seen by many to be essential for the improvement of waste regulation throughout the UK. Indeed, to delay the introduction of these new licensing powers may create

problems for the Government with the European Commission, with regard to prolonged non-compliance with both the 1975 "framework" Directive on waste, and the 1978 Directive on toxic and dangerous waste. There would not appear to be any justification for delaying the introduction of the new powers.

Air Pollution Control

18. The consultation paper (in paragraph 57) invites views on the possibility that some local air pollution controls might remain with District and Island Councils and the desirability of giving the function of monitoring of smoke control to SEPA. The consultation paper issued on 3 October 1991 by the Department of the Environment with regard to the proposed establishment of an Environment Agency for England and Wales, does not propose the transfer of the local authority air pollution control system to the Environment Agency. There does not appear to be any justification for a different approach in Scotland, with the proposed transfer of the local air quality control functions to the SEPA. The argument given in the consultation paper for the transfer, is that SEPA should adopt an integrated approach to pollution control and therefore it would seem logical for it to assume these functions in Scotland. This does not appear credible. The processes scheduled for local authority air pollution control are those which have a potential to have an effect on local air quality, but without the potential for significant water or land pollution.

19. The paper recognises that there are arguments for leaving all or some of the existing scheduled processes with local authorities. The existing Part B processes, as described in Schedule 1 of the *Environmental Protection (Prescribed Processes and Substances) Regulations 1991*, appear appropriate for local authority air pollution control. The list of prescribed processes would, however, require to be kept under review.

20. It would not appear to be desirable to leave local authorities with only minor air pollution control powers, as District Councils could be left to regulate only a small number of troublesome processes, without adequate legislation or expertise to achieve the necessary degree of control.

21. The suggestion that SEPA would assume the Secretary of State's powers in relation to smoke control areas, and be given additional powers to require remedial action by any Council which does not enforce effectively its smoke control areas is welcomed. Smoke control in Scotland, and elsewhere in the United Kingdom, has proved to be a success, with local communities benefitting from much improved air quality as a result of local authority action entailing low cost and low technology solutions. If the Agency were to promote the establishment of further smoke control areas and active enforcement in these areas, then this would have immediate and long lasting environmental benefits.

    It is understood that there is a possibility that Exchequer grant contributions to local authorities for smoke control programmes may be being withdrawn within the next few years. Having regard to the comments made above, it is suggested that it would not be desirable to withdraw this grant to local authorities meanwhile, in order to assist in encouraging authorities to embark on smoke control programmes.

Other Options

22. The consultation paper does not present any real options for the role and remit of SEPA, merely stating that an agency should be formed and explaining what the various powers and duties should be. Views are invited on only a few detailed matters. This is in contrast to the DoE consultation paper on the proposed Environment Agency which presents a range of options and states that, "the Government has not reached a firm view on which of these options might best fulfil its objectives for the Environment Agency; and there may be other options which should be considered". There would, in the same way, appear to be other options for the SEPA, which are not presented in the consultation paper. It is worth considering these options in more detail.

23. The proposals relate only to the regulation of certain aspects of waste disposal, air pollution and water pollution, mainly for industrial processes. The exclusion of major areas of pollution control and environmental protection — for example, energy, transport, agriculture and fiscal policy — represent fundamental omissions, any of which could negate the benefits of actions within the remit of a narrowly based Agency.

The HSC/HSE Model

24. A number of commentators have pointed to the structure of the Health and Safety Commission and Executive as an appropriate model. There would appear to be merit in considering this approach. An Environmental Protection Commission (EPC) could undertake the assessment and review of national environmental policy and the strategy for its implementation. Advice from the Commission would be an important influence for Ministers in determining environmental policy. One task for the EPC could be to produce a regular national environmental assessment.

25. An Environmental Protection Executive (EPE) could be charged with the oversight of the information and enforcement necessary to secure environmental improvement, the research and monitoring required to underpin it and the publication of pollution data to ensure that the public is kept informed. The composition of the Commission could reflect its independence and provide a broadbase of expertise. Membership could include representatives of central and local government, industry, professional institutions, regulatory authorities, environmental groups, scientists and academics.

Roles for SEPA

26. It would appear that the role to be played by any future SEPA would require to be wider than those identified in the consultation paper. It is suggested that the following roles should be included:

    (a) a BPEO assessment of UK cross-sectoral issues (e.g. waste, energy, transport, planning etc) to set policy guidelines for individual projects.

    (b) advice to Government on environmental quality and pollution control standards, coupled with regular state of the environment reports.

(c) oversight of environmental auditing standards and environmental performance of government departments and regulatory bodies.

(d) assessment of national compliance with EC and UK legislation.

(e) monitoring and facilitating public access to environmental information.

(f) specialist advice and support to regulatory authorities.

(g) the identification of research priorities and commissioning of research.

(h) advice to Government on development of environmental taxation and permit systems.

(i) co-ordination of environmental monitoring and interpretation of the data to give an annual evaluation of the state of the UK environment as an open basis for policy.

(j) influencing and enforcing EC legislation.

The Reorganisation of Local Government

27. The consultation paper does not adequately address the effect which the reorganisation of local government is liable to have on pollution control. Larger, single tier local authorities would be expected to be better equipped to provide the necessary technical expertise with regard to waste regulation and local authority air pollution control.

28. In this regard, there is a further option available, which is not identified in the consultation paper. It would be possible to allow the single-tier local authorities to retain responsibility for waste regulation and air pollution control, but with either, or both of these duties being transferred to SEPA by agreement. It would also be possible to invest the Secretary of State with the power to transfer these duties to the SEPA, where the Agency could adequately demonstrate that these functions were not being carried out effectively by an individual local authority. This option would appear worthy of further detailed consideration.

Conclusion

29. Although the establishment of a Scottish Environment Protection Agency is welcome, the formation of an Agency having the remit envisaged in the consultation paper is reluctantly rejected. The document does not explain that there are other options available in order to ensure that the key principles identified in the paper are addressed; and does not adequately address other key "principles" such as increased effectiveness, local flexibility, participation and accountability. In addition, the paper ignores the complex interactions of environmental policy and thus fails to propose an Agency having a truly broad environmental perspective.

30. This consultation process represents a rare opportunity to propose major adjustments to the structure of environmental protection and proposals which were more far sighted and imaginative would have been welcomed. Rather than tinker with current responsibilities, it is suggested that the Government should seize the

opportunity to create an independent and authoritative voice at the heart of national environmental protection. It is believed that the first step would be to create an independent Environmental Protection Commission to evaluate the most appropriate structure and remit for an Environmental Protection Executive. In the long term this could be more likely to produce a durable and effective framework for environmental protection.

PLANNING AND NOISE
DRAFT PLANNING POLICY GUIDANCE

Introduction

The NSCA National Noise Committee has long advocated a review of the Department of Environment's Planning and Noise Circular (10/73). This was also a key recommendation of the Government's Noise Review Working Party (the Batho Report, 1990).

The draft PPG builds on the principles established in the Planning and Noise Circular and suggests new mechanisms and guidelines for local authorities to adopt. General principles of how noise should be taken into account in the planning process are suggested and other statutory controls which exist to control noise are outlined. It deals with: noise from road traffic; aircraft; railways; industrial and commercial development; construction and waste disposal sites; sporting, entertainment and recreation activities; and mixed noise sources. The guidance outlines for each the relevant considerations to take into account when determining planning applications for development which will either generate noise or result in new development being exposed to existing noise sources.

A further key recommendation of the Batho Report was that guideline action levels should be established to assist local authorities in assessing proposals for noise sensitive developments; this has been developed in the PPG as Noise Exposure Categories with various noise levels suggested for schools and dwellings.

In welcoming the draft PPG and in particular the role of planning in tackling noise problems, NSCA said it was important to emphasise the importance of effective liaison between Planning and Environmental Health specialists and recommend the development of local authority policies to ensure that appropriate interdepartmental consultation takes place. While many of NSCA's comments had focussed on the nuisance aspects of planning and noise, NSCA recognises that the main purpose of the planning system is to secure a continuous improvement in amenity, rather than to provide a basis for action against noise. NSCA would also like to see a more comprehensive review of the planning system to make it more responsive to environmental considerations. NSCA made a number of other comments.

Change of Use

One particular source of nuisance is the change of use of a building to a noisier activity without the installation of effective noise containment measures. The requirements of

the building regulations do not apply if building works are not proposed and so the prevention of nuisance relies on a condition attached to the grant of permission. Guidance should recognise changes of use as a potential source of problems and explicitly support the use of conditions to prevent noise nuisance.

Background Levels

The draft draws attention to the disruption that noisy uses can create in quiet residential areas, advising particular attention to increases in ambient noise levels. The concept of "background creep" was a useful feature of 10/73 and is not adequately emphasised as a General Principle. It is important to point out that ambient noise levels can creep up even with the introduction of uses which are quieter than their surroundings.

Noise from Aircraft

Local authorities currently have no powers over noise from aerodromes. However powers may be extended as the result of the consultation currently being undertaken on the control of noise from aircraft, which proposes to create a new power of designation for airports. We consider that local authorities and aggrieved individuals would be greatly assisted by the designation of aircraft noise and noise from airfields as a statutory nuisance under the *Environmental Protection Act.*

The draft recognises that infrequent helicopter movements can be a nuisance and give rise to considerable loss of amenity for those affected. It suggests that although planning permission is not generally required for a landing area used for 28 days or less a year, it may be appropriate for a local authority to make a direction which requires a planning application to be submitted. The "28-day rule" under the GDO is an inexcusable loophole for noisy activities. We would recommend that the temporary use allowance for specified noisy activities, including helicopter landings and noisy sports, should be reduced to 14 days across the board. Furthermore, withdrawal of GDO rights using an Article 4 Direction or a discontinuance order should not be subject to compensation. Noisy activities are straightforwardly antisocial, and under no circumstances should individuals be compensated for any requirement to cease.

Noise from Railways

The most commonly used distance for measuring noise and vibration from railways is 30m from track to the nearest building. The draft suggests a minimum distance of 15m with proposals for residential development within 60m advised to be assessed for the impact of vibration. We would query the research basis for the 15m figure.

The guidance could also make a distinction between standard rail and light rail. Experience with, *inter alia*, the Docklands Light Railway has shown that the rolling stock and track have very different noise generation characteristics; it might be appropriate to specify alternative separation distances for light rail.

Noise from Sporting, Entertainment and Recreational Activities

Where planning applications are made for activities covered by DOE-adopted Codes of Practice, compliance with the relevant Code should be a planning condition. We

would re-emphasise the need to reduce the 28-day GDO loophole in order to bring more noisy activities of this type under planning control. A recent decision to reduce the period to 14 days for clay pigeon shooting activities was shamefully reversed, and the much-delayed COP on clay pigeon shooting is still awaited.

It would be helpful to refer to the powers available to local authorities to require planning permission for some temporary events and to impose entertainment licence conditions relating to noise.

Noise Exposure Categories

Appendix 1 proposes four categories for the assessment of new, noise sensitive developments near a noise source. These are

- A: noise need not be considered as a determining factor in granting planning permission, although the noise level at the high end of the category should not be regarded as a desirable level;
- B: authorities should increasingly take noise into account when determining planning applications, and require noise control measures;
- C: there should be a strong presumption against granting planning permission. Where it is considered that permission should be given, for example because there are no alternative quieter sites available, conditions should be imposed to ensure an adequate level of insulation against external noise;
- D: planning permission should normally be refused.

Recommended limits are given for each category for dwellings and schools exposed to noise from road, air and rail traffic and from mixed sources. NSCA suggests that libraries and places of worship should also be considered as "noise-sensitive buildings".

In commenting on the categories, NSCA welcomes the principle of setting noise levels which trigger a particular planning response. It gives certainty and is necessary for consistency. However, the four levels of response do not appear to offer any improvement on the three levels proposed in the Batho Report. Furthermore the descriptions of the categories are different in the main body of the text (para. 2) and Appendix 1. In the main body, category D is qualified by the clause *"in the absence of strong planning reasons to the contrary"*. This qualification is unnecessary as policy on noise will always be only one policy consideration, and all policy will be only one consideration — albeit the primary one. Similarly, the qualification of category A in Appendix 1 *(". . .although the noise level. . ." etc.)* is unnecessary and would hinder the use of the noise levels as firm guidelines. Categories C and D should be amalgamated as there would be no difference in practice between implementing *". . .a strong presumption against granting planning permission. . ."*(C) and *". . .permission should normally be refused. . ."*(D), especially when D is qualified by *". . .in the absence of strong planning reasons to the contrary. . .".*

Noise category C suggests a new test to the consideration of a planning application for a noise-sensitive use: *". . .permission should be given, for example because there are*

no alternative quieter sites available. . .". This would require testing the suitability of all other possible sites within a local planning authority's area — a considerable task if done rigorously. This exceptional circumstance which would allow the grant of planning permission should also be qualified by an overwhelming need for the development.

A different day length has been adopted in the draft guidance (0700-2300 hrs) from that proposed by the Government for insulation from railway noise and as currently set out in regulations for road noise (0600-2400 hrs). Standardisation would help implementation; the longer night would be a closer approximation to people's habits.

A full copy of the NSCA's response is available from the NSCA, 136 North Street, Brighton BN1 1RG.

NOISE AT SURFACE MINERAL WORKINGS

Introduction

In October 1991 the Department of Environment issued a draft Mineral Planning Guidance Note (MPG 11) for consultation. The aim of the Guidelines is to provide advice on how the planning system can be used to keep noise emissions from surface mineral workings within environmentally acceptable limits without imposing unreasonable burdens on minerals operators. They will replace the advice on noise control set out in paragraphs 89-92 of MPG 2, "Applications, Permissions and Conditions". They will also supplement the general advice in the Planning Policy Guidance Note which will replace DOE Circular 10/73 (WO 16/73), "Planning and Noise". The new Guidelines will also supplement advice on control of noise at mineral sites covered by Interim Development Orders (ISOs) provided in MPG 9, "Planning and Compensation Act 1991: Interim Development Order Permissions (IDOs) — Conditions".

Mineral Planning Authorities' (MPAs) use of planning controls, and particularly the use of conditions attached to planning permissions, represents an important tool for the control of noise at mineral sites. However, the Government also looks to the minerals industry to be a "good neighbour", and to keep noise emissions down to acceptable levels through good environmental practice. This good practice should not be confined to the aspects of the mineral operation which can be made the subject of planning conditions, but should be part of industry's efforts to make all of its operations more acceptable to the communities in which it works.

The Guidelines recommended the use of a model modified from that in BS 5228 for the prediction of the likely level of noise emissions from a proposed mineral development. (BS 5228 deals with the control of noise from construction and demolition sites.) Two methods for setting noise limits for mineral sites which can be incorporated into planning conditions are recommended. Advice is provided on how the noise levels from surface mineral sites can be most effectively monitored. Finally, the draft MPG discusses a number of noise control practices which can be made the subject of planning conditions and/or incorporated into good practice by the mineral operator.

NSCA Response — Summary

In its response the NSCA National Noise Committee welcomed the development of the Mineral Planning Guidance Note. Mineral working is an inherently noisy activity and can give rise to local nuisance, much of which could be avoided if problems were anticipated at the planning stage. MPG 11 will be of considerable help in this respect, but must be seen in context of the inadequacy of BS 4142 in respect of short duration noise, and the broader aims of the update of the draft PPG "Planning and Noise".

NSCA believes that the guidelines will allow developers more flexibility than rigid application of BS 5228. This will allow the natural noise control advantages of a particular site to be exploited, but in return developers should be required to prepare a comprehensive noise management scheme showing how noise will be minimised throughout the life of a development. Short term activities such as building noise bunds or restoring overburden should be included.

A full copy of NSCA's response to the consultation paper is available from the office (136 North Street, Brighton BN1 1RG).

PLANNING POLICY GUIDANCE: RENEWABLE ENERGY

Introduction

This draft PPG which was published for consultation early in December 1991 describes the various renewable forms of energy and explains its potential role in tackling greenhouse gas emissions; it sets out the relevant instruments of policy, including the Non-Fossil Fuel Obligation and outlines relevant environmental protection legislation. There is a statement of general planning aims and an explanation of how local planning authorities should include renewable energy policies in their plans. The PPG notes the considerations which should apply when it is intended to locate renewable energy installations in designated areas and explains the requirements for environmental assessment.

There is a separate annex covering wind energy which looks at the technology, planning implications and the various environmental factors to be taken into account.

NSCA Response

In welcoming the publication of the draft PPG on the development of renewable energy installations, NSCA recognises the difficulties of assessing planning applications for energy installations while reconciling local impacts with national strategic needs. NSCA feels that there is a need for a stronger statement of national energy policy against which local environmental considerations may be weighed. While the PPG goes at least part of the way in setting the national context for the development of renewables, NSCA considers that the introductory paragraphs take an unduly narrow perspective. The financial return and environmental impact of proposals to invest in energy capacity should be compared with options for investment which would have the same net effect. The introductory paragraphs should also distinguish more clearly

between developments which are primarily intended to feed the National Grid and those which produce energy for other applications.

Energy policy in the UK is supply oriented with little attention paid to demand management. There is currently no national policy framework against which to judge individual applications for power stations, windfarms, incinerators, barrages, etc, and there is no mechanism to promote a rational balance of energy generation, efficiency and conservation through mechanisms such as least cost planning. We look to the new Environment Agency to provide a more thorough evaluation of the competing impacts of energy options for the UK, which would address wider issues like security of supply, resource depletion, and longer term problems like nuclear waste disposal.

In view of the impact of the NFFO NSCA urges that further annexes are produced on specific technologies as quickly as possible. In particular, it considers waste-to-energy plant and tidal barrages to be in the most urgent need of evaluation.

NSCA also suggests that the PPG should give equal prominence to the other advantages of renewable energy in addition to its role in reducing greenhouse gas emissions. For example producing electricity from renewable sources could displace fossil fuel combustion (thus reducing acid deposition and depletion of non-renewable resources) and nuclear fission (thus reducing radioactive waste); both are at least of comparable importance to GHG reductions.

A full copy of NSCA's response is available from the office at 136 North Street, Brighton BN1 1RG.

WASTE REGULATION

Introduction

In its consultation paper setting out proposals for establishing an Environment Agency, the Government propose transferring waste regulation from local authorities to the new Agency. However, it is also suggested that there might be a role for district councils in England and Wales in dealing with closed landfill sites. In a further consultation paper, views are sought on this and on the administration of controls on incinerators once an Environment Agency is set up.

Regulation of Closed Landfill Sites

NSCA welcomed the proposals for regulation of closed landfill sites provided that they are interpreted with sufficient flexibility to allow for the differences between authorities in their capability to meet the challenge of closed landfill site management. In general the proposals recognise responsibilities sensibly and apply the principle of subsidiarity reasonably.

The Society agrees that district councils should be responsible for identifying closed landfill sites. Districts should also be responsible for initial assessment of sites

and monitoring low-risk sites in accordance with a protocol agreed with the new Environment Agency, and subject to expertise being available within the district. The Environment Agency should have a general overseeing role in relation to assessment monitoring and clean-up of sites, but should monitor and manage high-risk sites.

Arrangements for Controlling Incinerators

Currently incinerators with a capacity under one tonne an hour are regulated for air pollution control by local authorities and those above this limit by HMIP. The consultation paper seeks views on whether, given the proposals for the Environment Agency to take over waste regulation, it would be appropriate for the Agency also to take over control of air emissions of small (Part B) incinerators — large incinerators, given HMIP's incorporation into the new Agency, would become part of the Agency's remit.

In its response to the Department of Environment, NSCA regrets that the proposals have come forward only after local authorities have put much effort into developing arrangements for control of Part B incinerators. It is likely that new regulations will lead to centralisation of incineration in facilities with a capacity greater than 1 tonne per hour, leading to the gradual disappearance of the smaller kind of plant now authorised under Part B of the *Environmental Protection Act.* Many health authorities are planning such a change, and guidelines in preparation by the Department of Health will accelerate such a process. The Society considers that in the interim local authorities should retain responsibility for planning permission for incinerators and the regulation of emissions to air from smaller incinerators.

RADIOLOGICAL PROTECTION

The National Radiological Protection Board (NRPB) has issued a consultation document* on its proposals for incorporating the latest recommendations of the International Commission on Radiological Protection (ICRP) into the UK framework of radiological protection.

At present the principles of radiological protection demand that;

— any practice which increases radiation exposure should be justified by demonstration that benefits outweigh additional risk;

— exposure from any source should be optimised by ensuring that the number of people exposed and the likelihood of exposure should be as low as reasonably achievable (ALARA);

— individual exposure from all controlled sources should be subject to dose or risk limits.

The Board now proposes that this conceptual framework should be extended by introducing the concept of a dose constraint which effectively gives quantitative guidance on what is meant by ALARA under particular circumstances.

Following discussion of the acceptability of levels of risk under various circum-

stances the consultation document proposes dose constraints for occupational and medical exposure to radiation.

Commenting on the NRPB proposals the Society has welcomed both the conceptual advance and the practical guidance which accompanied it. It will be appreciated that the quantification of dose constraints does not diminish in any way the need for doses to be ALARA. It is also vital that the Board keeps the numerical values of dose constraints under review in the light of new advice from ICRP and the results of its own research. It is vital also that the UK Government ensures that the latest research results are reflected in European legislation.

*Board Advice Following Publication of the 1990 Recommendations of ICRP, NRPB M321, October 1991, Obtainable from NRPB, Chilton, Didcot, Oxon OX11 0RQ

EPA, PART I: CHARGING FOR POLLUTION CONTROL

HMIP Charges 1992/93

As a result of its first year's experience of implementing Integrated Pollution Control in England and Wales, HMIP is proposing huge increases in its charges for 1992/93. Processing of an IPC application is expected to cost £3,800 per component (£3,050 for those already regulated under the old *Alkali Acts*); the charge for varying an authorisation will be £1,240 per component and the annual subsistence charge £1,500 per component. Processes which received their authorisation during 1991/92 will also be required to pay an additional £900 per component as a result of under-estimation of costs for 1991/92; it is proposed to spread recovery of the balance of its costs over two years.

While reiterating its strong support for IPC, NSCA expressed its concern about the very large increases. In particular NSCA felt that the nature of the overheads which lead to levying a charge of £900 per day for an Inspector whose actual salary costs are in the vicinity of £150-£200 per day should be explained more fully. NSCA also felt that there was a need to demonstrate that increased charges are fully justified and that every effort is being made to secure efficiency gains, including consideration of opportunities for competitive tendering on appropriate aspects of the work. It is also important that the Inspectorate's effort should be directed towards pollution prevention, and paperwork kept to the minimum necessary for the maintenance of public confidence.

Local Authority Charges

The charge for an authorisation for a Part B process is to be increased to £900 for 1992/3 (£800 in 1991/2) and the subsistence fee is increased by £50 to £550. Charges for waste oil burners are unchanged (£100).

Earlier in the year NSCA had written to the Department of Environment expressing conern that the charge for an initial authorisation did not cover local authority costs.

Many NSCA local authority members are reporting difficulties on two counts. Firstly the actual number of applications for the first block of prescribed processes has not met expectations. Clearly there is a large number of process operators who are failing to apply, either through ignorance or wilful reluctance. The amount of time and effort expended by authorities in chasing applicants has been contrasted with the experience of HMIP, whose channels of communication with client industries are already well established. Secondly the standard of many of the applications received has been poor, increasing the requirement for staff time to assess and return applications with requests for supplementary information.

NSCA also expresses concern that prompt and competent applicants from industry are being penalised because of the costs of pursuing and assisting the recalcitrant incompetent. NSCA suggests that there is a clear need for a penalty system.

NSCA concludes that despite the increased charge for an initial authorisation, the difficulties experienced with initial applications would support higher fees at this "pump-priming" stage. This is particularly relevant in view of the significant increases proposed for the second phase of HMIP cost recovery charging.

NSCA NEWS

NSCA/AMA SURVEY ON PART I OF THE EPA

A survey carried out by the Association of Metropolitan Authorities in the summer of 1991 revealed that well under half the expected number of applications for authorisations for Part B processes in Block 1 (i.e. applications required between 1 April and 30 September 1991) had been received. A follow up survey carried out in the Autumn showed that although the number of applications received had risen, only five authorisations had been issued, all for small waste oil burners. The AMA summarised the reasons for the slow start as

— apathy within the industry;
— delays in publishing regulations and guidance notes;
— no standard application form;
— difficulties faced by local authorities getting additional staff;
— complicated procedures requiring time, effort and training to understand;
— lack of national publicity.

While the surveys did not cover non metropolitan district councils, information from various sources would indicate a similar pattern for other authorities.

NSCA and the AMA both agree it is important to continue to monitor progress on implementation of Part I of the EPA and have decided to collaborate in a further sur-

vey. This will cover all local authorities responsible for Part B processes and the aim is to gather information about experience to date and the state of play up to the end of the Block 2 application period (31 March 1992). The survey will collect data on the actual number of applications received and the estimate of the total number expected in each area; adequacy of information on the applications; experience in operation; cost recovery; prosecutions for failure to apply for an authorisation; and use of the public registers.

Survey forms were to be sent out at the end of March with the aim of having a report ready by early summer.

SOUTH WEST DIVISION

The winter meeting of the South West Division took place in December 1991 at the offices of East Dorset District Council. It was preceded by a business meeting of Divisional Council, with the new Hon Secretary, Mr John Jefferies taking over from Mr K. Horton who will continue to contribute to the work of the division as its representative on the Society's Parliamentary and Local Government Committee.

The meeting took the form of a seminar with three guest speakers giving presentations on the subject of domestic noise. After a welcome and introductions by Mr Hylton Dawson (Chairman), Mr Steven Duckett, Chief Environmental Health Officer, East Dorset District Council, provided a comprehensive review of the problem of domestic noise complaints. He demonstrated, using statistics from governmental and Institution of Environmental Health Officers' reports, that there is an escalating trend in complaints which will continue to require a concerted response using a combination of tact, diplomacy and enforcement.

The second speaker, Mr Paul Holder representing the charity Bristol Mediation, explained how an independent Noise Counselling Service had been established in collaboration with Bristol Health and Environmental Services. The Counselling Scheme had been part-funded from the Environmental Grant Fund and meets the Government commitment to assist community approaches to domestic noise as set out in the white paper *This Common Inheritance.* He expressed the view that domestic noise complaints can in some instances be manifestations of other social and interpersonal issues such as neighbourly disputes. These cases would not constitute a statutory nuisance and could be more properly dealt with by the process of mediation.

Mr Steve Shrewsbury of Bristol Health and Environmental Services gave the final presentation on effective sound insulation for flat and bedsit conversions. He provided detailed technical information on design features that should be adopted as a minimum and how planning legislation and building regulations can be used to ensure satisfactory standards.

The meeting concluded with a wide ranging question and answer session with particular interest being expressed on the role of an independent noise counselling service.

NSCA SCOTTISH DIVISION SEMINAR CONTAMINATED LAND

One hundred and eighty people from North and South of the Border attended the Scottish Division Seminar held in Glasgow in February. The Seminar, which was chaired by NSCA Secretary General, Tom Crossett, focussed on the forthcoming public registers of land which may be contaminated.

Policy Issues

The keynote address was given by Jenny McCusker of the Scottish Office Environment Department who discussed the policy context of the proposed registers. She referred to the "polluter pays" principle, the need for public access to environmental information, and the Scottish vacant land survey. She discussed the content of Planning Advice Note 33 on the development of contaminated land and the House of Commons Select Committee First Report on Contaminated Land.

It was noted that Section 143 of the *Environmental Protection Act* gives powers to make Regulations specifying contaminative uses of land, the form of registers and their maintenance and how persons are to be informed of information on registers. A number of issues had been identified in the recent consultation exercise on the form of the registers:

- The method of compilation, blight and public concern, list of contaminative uses, categories of information on register entries, publicity for individual entries, liability and removal of entries following remedial work.
- Scottish Office do not regard computerisation of registers as a requirement, although some authorities will adopt a geographic information system approach.
- Although entries on the register could lead to blight, Miss McCusker felt that it was important to remember that the register was only of historical uses of land.
- Local authority consultees were worried that entries on registers could lead to legal liabilities. Advice from Scottish Office solicitors suggests that this should not be a problem.
- Entries should not be removed from the register, since the register records only the history of the site and not actual contamination.
- Most consultees felt that individual owners of sites should be notified of entries on registers, although some consultees felt that press advertisements might be adequate.

Ministers are now being asked to address a number of issues, namely: timetable, public information, range of contaminative uses, sources for register entries, and liability. There could be delay in implementation of regulations beyond April 1992. There could be a requirement for notification of owners of land which will appear on the register. A research project on contaminated land assessment techniques is underway.

A key issue still to be addressed by Government will be who pays for clean up of contaminated land, i.e. should it be the landowner, or the taxpayer, or others.

Legal Aspects of Contaminated Land in Europe, the USA and the UK

Donald Reid (Morton Fraser Milligan) introduced his paper by explaining why contaminated land was such a topical issue, touching on increasing public concern, new legislation, market forces and health and safety. He reminded delegates of the pressures for redevelopment of contaminated land. He defined contaminated land and pollution, and dealt with the difficult topic of when pollution occurs: this is problematic since pollution can often be diffuse.

The legal liabilities from contaminated land were addressed by Mr. Reid including the *Environmental Protection Act* requirements of waste management and duty of care and the "closed landfill" provisions, in addition to planning and building regulations and the law of nuisance. Some of the difficulties involved in the legislation were identified as being the fact that legislation is not retrospective and also the polluter often does not have the ability to pay.

Mr. Reid went on to discuss contaminated land issues in Europe and the USA, and explained that there were widely differing standards. In the European Community strict civil liability for waste is being introduced, and this will be very significant. In the USA standards were tighter, and the Environmental Protection Agency (EPA) has more power. Sentences for environmental protection offences are more severe. The civil liabilities in the USA are also very strict. A superfund has been set up to deal with clean up of historically contaminated sites. This can bring in liability for site users up to 30 years previously. The system involves everybody suing everybody else. The EPA sues who they think is the main polluter. This company sues others involved for pollution, and they in turn sue their insurance companies. The general consensus is that the superfund system is out of control. Fifty-five per cent of clean up costs are represented by legal fees. Arbitration is being looked at as an alternative.

In relation to contaminated land registers in the UK Mr. Reid mentioned the need for property searches, and discussed adjoining land problems. He also mentioned blight and suggested that people issuing leases for property may restrict their issue to non-contaminative uses. Mr. Reid felt that in future there will be a prioritisation of entries on the contaminated land register. He believed that 10 per cent of entries on the register may need urgent attention.

Contaminated Land Registers: The Potential Benefits

Phil Blake (Mott MacDonald Ltd) said that it has always been important that the potential for contamination is known and taken into account in the redevelopment of land. At the present time the responsibility for identifying contamination and the need for action rests primarily with the developers. Some have ignored this need, which he believed has led to the need for contaminated land registers.

The main benefit of registers of land which may be contaminated, according to Mr. Blake, is likely to be the provision of an indication of the size of potential problems and

perhaps to help rationalise the site investigation process. Mr Blake felt that the registers would also help to overcome the problem of vendors withholding information on contamination. Other benefits of registers were identified by Mr. Blake as including helping to assess the size of contaminated land, improving awareness of vendors and purchasers of land and the public, and improving site remediation.

Managing the Risk of Contaminated Land

Matthew Davies (Environmental Assessment Group Ltd) said that the risks associated with contaminated land were very real. His paper considered how these risks are manifest and what can be done to avoid them; why owners of contaminated land are now more likely to be required to treat it; why the standard of clean-up will be higher, how the costs of treatment are increasing; and the implications for property values. The paper concluded by suggesting measures that can be taken to minimise the risk of unknowingly acquiring land which is contaminated.

Mr. Davies suggests two approaches for managing the risk posed by environmental liabilities. The first involves a review of properties and is designed to forewarn of those likely to appear on public registers of contaminative uses, and where there may be associated costs. The second is a procedure to check on future acquisitions to safeguard against inheriting unforeseen liabilities or environmental costs.

POLLUTION UPDATE 92

NSCA NORTH WEST DIVISION SEMINAR TUESDAY 23 JUNE

Pollution affects us all — whether it be in the air we breathe, the water we drink or the land on which we build or walk.

Pollution from road vehicles is a major concern for future predictions on air quality and during the morning speakers will focus, in particular, on source control, monitoring and future fuels.

The first part of the afternoon will look at water pollution with a speaker from the Dept. of Environment on effluent treatment. The second part of the afternoon will address the problems of contaminated land with speakers looking at the proposed contaminated land registration system and at what can be done to bring land back into use.

Pollution Update 92 aims to provide up to the minute information on topical sources of pollution and to provide an opportunity for exchange of ideas.

For more details of the seminar, which will be held at British Gas in Altrincham, contact

R.N. Turner (Hon Secretary), NW Division
Housing & Environmental Health Dept
9 West Street, Prescot, Merseyside L34 1LF

REPORTS

ENVIRONMENTAL PROTECTION ACT 1990 (PART I) MEETING THE CHALLENGE

Robert Crosby
Assistant Secretary
Yorkshire and Humberside Pollution Advisory Council

The Yorkshire and Humberside Pollution Advisory Council (YAHPAC) consists of 31 local authorities in the Yorkshire, Humberside and Lincolnshire region, along with Public Analysts and Higher Educational establishments. Part of its "raison d'etre" is to provide technical advice and co-ordination of activities involving environmental protection functions between its constituent local authorities.

Among the activities YAHPAC is currently engaged in are the consideration of regional air quality monitoring, water quality monitoring (including drinking water), an inventory of local authority based environmental expertise and monitoring equipment, contaminated land investigations and registers, and of course Part I of the *Environmental Protection Act 1990.*

The following is a brief outline of YAHPAC's activities relating to the EPA.

As the Environmental Bill was on its way to becoming law, YAHPAC recognised the challenge which Part I made on local authorities. The local authority associations and professional groups had fought for control powers similar to those of HMIP, and the Act laid down the gauntlet. The challenge to local authorities was to develop expertise, process applications efficiently, and perhaps most important of all, to ensure consistent interpretation of the Secretary of State's Guidance Notes, and indeed the legislation itself.

The Act itself did not come onto the Statute book until 1 November 1990, giving four months for local authorities to "get their act together" before the first applications could be expected after 1 April 1991. As we now know, of course, those first Process Guidance Notes were not received by local authorities until mid February 1991, and most importantly the General Guidance Notes, which explain how the whole procedure operates, were not received until mid April 1991. The challenge was still, however, for local authorities to perform.

In the Yorkshire and Humbershire region, we have responded to these challenges by pooling resources and expertise of member local authorities by the following initiatives:

1. **Three Day Introductory Workshop — March 1991.** All the YAHPAC local authorities attended a residential workshop devoted to the implementation of Part

One. Gavin Tringham from the Local Authority Unit steered much of the workshop and updated representatives with the Department of the Environment thinking of that time (i.e. prior to the Regulations, or GG Notes being published). Industrial speakers from the first batch of processes contributed to a general awareness raising exercise which was warmly welcomed by all participating local authorities.

2. **Process Database.** In the summer of 1991, a central database was established containing details of all applications for authorisations received by local authorities in the region. In response to notifying the database of an application, the member authority receives details of all other applications for a similar process anywhere in the region. Along with these details is the name and telephone number of the local authorities' officers dealing with the applications. This system is designed to encourage inter-authority contacts and discussions, and also to identify and prioritise training needs. At the time of writing (March 1992) 433 "duly made" applications have been recorded by the database. Some of the "duly made" applications are as follows:

Combustion Processes		132	*Heavy Clay Goods*		27
(Waste Oil	= 113)		*Timber Processing*		124
(Combustion	= 3)		(>10,000 m^3	= 1)	
(Timber	= 10)		(>500 m^3	= 123)	
(Other	= 6)		*Animal/Veg Processes*		17
Incineration		59	(Maggot	= 16)	
(Crematoria	= 23)		(Other	= 1)	
(Other	= 36)				
Glass Manufacture		10			
(Ordinary	= 7)				
(Lead Glass	= 1)				
(Etching	= 2)				

The database is currently being developed to provide details of processes authorised by local authorities in the region, and the use of this as a regional index to the public registers is being considered.

3. **Officer Working Groups.** These groups are set up in accordance with priorities determined through the database, and the use of a "Training Demand" questionnaire of all member authorities. Meetings are held to discuss common problems with both specific processes and the application of the Guidance Notes. These meetings are recorded and the notes circulated to all member local authorities.

To date, meetings have covered:

Brickworks and Ceramics
Crematoria and Incineration
Timber Processes
Cement/Mineral Processes
Waste Oil Burners
Glass Works

Maggot Breeding
Coal Handling
Metal Processing
Process Authorisation — Practical Problems

4. **Workshops.** To deal with certain subjects in more depth workshops are held. These have involved site visits and talks by/discussion with the trade. To date there have been two such workshops involving galvanising processes and particulate emission monitoring.

The result of this co-ordination and high profile of YAHPAC within the region, is that many anomalies and difficulties in the legislation have been identified and discussed directly with the Department of the Environment. Advice is sought from the Department of the Environment in a co-ordinated manner and YAHPAC acts as a "sieve" for its member authorities.

Co-ordination at regional level has therefore proved effective at developing expertise and improving consistency. It also ensures the best use of expertise in the region. This benefits not only the local authorities, but the Department of the Environment and industry. There is, however, still much to be done. Anomalies and deficiencies in the legislation are being identified and relationships are being developed with other regional groupings. This is essential in order to ensure consistency of approach on a national basis.

NEIGHBOUR NOISE INVESTIGATIONS USE OF TAPE RECORDED EVIDENCE

The *Environmental Protection Act 1990* (Part III) places a duty on local authorities to take all reasonable steps to investigate complaints of noise. However, the number of complaints, particularly about neighbour noise, can put severe strains on an already overloaded environmental health department. Often, too, problems arise out of normal working hours and indeed it may be difficult for an EHO to investigate personally all complaints received about persistent noisemakers.

In an effort to solve this problem, Birmingham Environmental Services Department has since the beginning of 1990 been making extensive use of tape recorders to investigate noise complaints. Evidence collected in this way has successfully been used in court to secure convictions for noise nuisance.

The paper below describes how noise complaints are investigated in Birmingham, the use of tape recorders in collecting evidence and the precautions taken to ensure the tape recorders cannot be tampered with by complainants.

The NSCA National Noise Committee has discussed the scheme and agreed that tape recorders might have a valuable part to play in some nuisance investigations and enforcement action. However, it was also of the opinion that evidence collected in this way had its limitations and should not preclude the collecting of supplementary infor-

mation and evidence. The Committee felt it would also like to compile information about similar schemes run by other local authorities to enable a more comprehensive evaluation of its practicalities.

Readers of *Clean Air* are therefore asked to write to Tim Brown at the NSCA (136 North Street, Brighton BN1 1RG) with details of practical experience of using tape recorded evidence as a means of gathering evidence for action against noise nuisance. We would be interested in the types of complaint in which tape recorders have been used, type of equipment, outcome in terms of success or failure. It is then planned to prepare a report for the Noise Committee for subsequent publication in *Clean Air*. This would include an assessment of opportunities for training which would enable officers to identify and successfully use tape recorders in the prevention of noise nuisance.

THE INVESTIGATION OF DOMESTIC NOISE IN BIRMINGHAM

John Hinton
Principal Officer (Noise)
Birmingham Environmental Services Department

This is a slightly modified version of a paper entitled "Investigation of Domestic Noise" presented to the 1991 Autumn Conference of the Institute of Acoustics.

Introduction

Domestic noise can be defined as noise which affects people in their homes or gardens as a direct result of the activities of their domestic neighbours, their guests or their animals. This type of noise disturbance can cause the most severe stress in the recipient. The disturbances often occur at unsocial hours, are unpredictable in nature and, in many cases, only affect one or two individuals. As a consequence, individuals can feel persecuted, isolated and relatively powerless to remedy the situation.

There is absolutely no doubt that domestic noise nuisance is an escalating problem. For example, recent evidence collated from environmental health departments across the country (ref. 1), showed a five-fold increase in complaints of noise from domestic premises between 1978 and 1988. Furthermore, the results of a Building Research Establishment survey carried out in 1986/87 (ref. 2), suggested that around 14 per cent of the adult population of England was bothered by one or more sources of neighbour noise. The survey also indicated that 34 per cent of neighbour noise complaints concerned amplified music, whilst a further 33 per cent concerned noise from dogs. The vast majority of these complaints related to noise emanating from domestic premises.

In view of the preceding statistics, it is clearly evident that domestic noise must be considered the major obstacle to a quieter Britain in the 1990s. Unfortunately, until recently it has been the source of noise often given the lowest priority by local authorities. This paper is not concerned with the reasons why the problem of domestic noise has now reached almost epidemic proportions, particularly in densely populated cities like Birmingham where, in 1990, 2500 separate domestic noise complaints were received by the Environmental Services Department. Nevertheless, it will hopefully stimulate

further discussion on the subject. The paper is concerned with the responsibilities of local authorities and the procedures which they adopt to investigate complaints of this nature. In particular, it examines the "good practices" adopted over recent years by Birmingham Environmental Services Department, in the hope that this may be of help to other local authorities in their battle against domestic noise nuisance.

Role of Local Authorities in Domestic Noise Complaints

Unfortunately, it is a widely-held view that people who suffer persistent domestic noise disturbance from loud music and barking dogs, particularly out of normal office hours, are often severely let down by their local authority. Individual authorities have traditionally adopted a widely-varied approach to the investigation of such complaints. Some, like Birmingham, have taken the problem extremely seriously and have undertaken to investigate all complaints, often by means of time-consuming, night-time visits to make observations and take measurements. For personal safety reasons, these visits are made by at least two environmental health officers (EHOs). Unfortunately, it is not uncommon for the disturbance in question to be mysteriously absent, or allegedly less severe than normal during the period of the visit.

Other local authorities have simply decided that they do not possess the resources to investigate "run of the mill" complaints of this type, unless a group of residents have complained. In these cases, individuals are frequently advised of their rights to take private action against their neighbours and are left to their own devices, unless they can enlist the help of a local councillor, member of parliament, or are successful in organising a petition. However, with the advent of the *Environmental Protection Act 1990*, local authorities now have a statutory duty "to take such steps as are reasonably practical to investigate complaints". Obviously, this statement is open to some interpretation but it is to be hoped that the result will be a more consistent approach to the investigation of domestic noise complaints across the country.

Procedures for Investigating Domestic Noise in Birmingham

It is the policy of Birmingham Environmental Services Department to fully investigate *all* complaints of noise, irrespective of the nature of the source. Where the noise is considered to amount to a nuisance, and the source is not exempt from the relevant legislation, a "section 80" abatement notice is served. However, undertaking all these investigations is a massive task. The statistics for April 1990 to March 1991 show that, City-wide, around 2500 complaints of domestic noise disturbance alone were made to the authority. Many of these complaints were resolved by a simple visit by an EHO to the complainant and/or to the person or persons allegedly causing the problem. However, an increasingly large proportion of complaints appear to concern intermittent noise which occurs in the evening, at night and/or at weekends. For reasons of efficiency, most complaints of this nature are now investigated using tape recording techniques which were originally devised for the investigation of non-domestic noise sources (ref. 3). Where this approach is adopted suitably trained technical staff normally carry out the exercise on behalf of the EHO, who remains the investigating officer.

The procedure is simple. The complainant is asked when they anticipate that the next period of domestic disturbance will occur. A calibrated two channel tape recorder

is then left at the complainant's house during the period in question. In the case of noise which passes through a party wall or floor, the microphone is normally placed inside the most affected habitable room. In the case of externally-generated noise, the microphone is normally placed one metre outside a window of the most affected habitable room.

It is important to appreciate that once installed it is impossible for a complainant to interfere with the controls of the tape recorder. If a Nagra tape recorder is used a security seal is fitted over the controls. If a Uher tape recorder is used this instrument is modified for "fixed gain" — i.e. the external gain control is disconnected.

The complainant is provided with a remote on/off (pause) switch which merely controls the tape transport mechanism. Therefore, the recorder is always "on" from the moment of installation but will not record until activated. The recorder is coupled to an external time code generator, via channel 2. Thus, whenever a noise recording is made on channel 1, the date and exact time is also automatically recorded on the second channel. The tamper-proof date and time generators and readers used by Birmingham are purpose-built from readily available electronic and electrical components. However, suitable devices are also available commercially. The entire set up is shown in figure 1 along with the approximate costs.

Before the equipment is left on site, the complainant is advised that a minimum of 1.5 hours of recording time is available and to use it to their best advantage during the planned period of the exercise. This period is normally kept to 48 hours or over a weekend. The complainant is also advised to keep a written record of the date, time and duration of each recording, along with a description of the noise source in each instance as this could be required in evidence if any formal procedures are instigated.

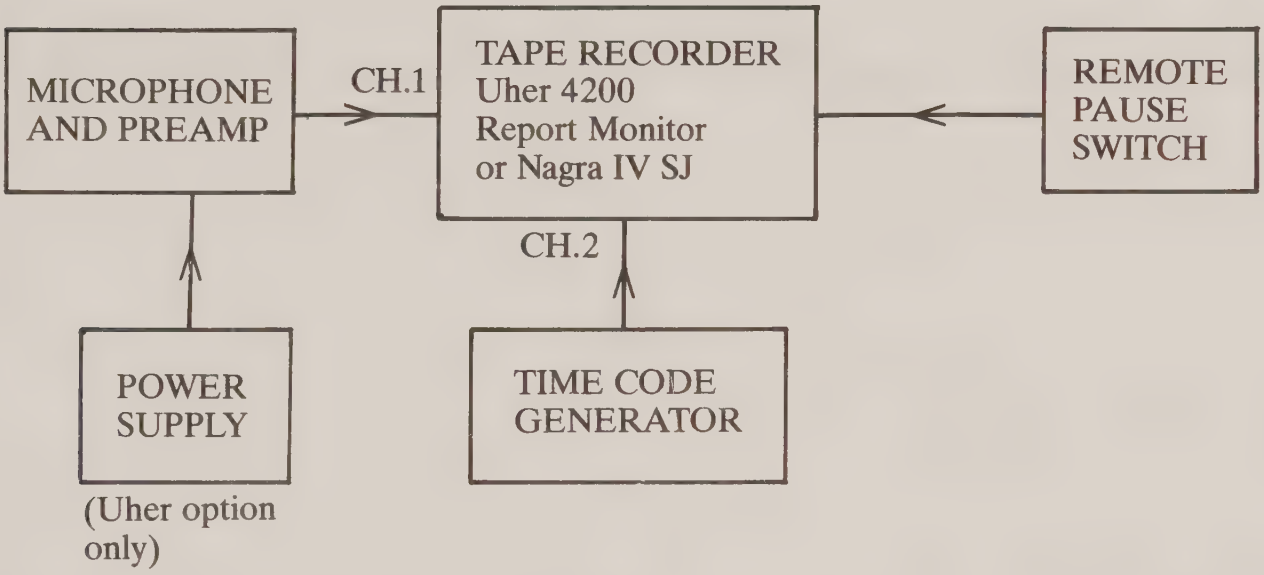
The equipment normally used for analysis purposes is shown in figure 2. This array of instrumentation, which includes a measuring amplifier for signal conditioning and a level recorder for a noise level versus time print-out, is fairly elaborate and expensive. An alternative system which will provide adequate analysis facilities in most cases using a standard sound level meter for signal conditioning and processing, is shown in figure 3, along with approximate costs.

Any significant recordings made by the complainant are normally analysed by the EHO who originally requested the exercise with the support, if necessary, of technical staff. Thus, the EHO makes the final judgement as to where a nuisance exists or where an existing notice is being contravened.

Use of Tape Recorded Evidence in Legal Proceedings

Normally, the EHO would prepare a statement of evidence based on his or her analysis of the tape recorded evidence. The technical staff who installed, calibrated and removed the tape recorder during the exercise would also prepare statements of evidence on these aspects of the investigation. These statements of evidence form part of the "prosecution file". Obviously, both the EHO and the technical staff need to attend court in the *extremely unlikely event* that the evidence is contested.

In a recent case in Birmingham a defendant was convicted in his absence of six



Approx Costs: B&K 4155 microphone £650, B&K 2639 preamp £550; Power supply £100, Uher (incl minor mods) £2200; Time code unit £500; Total £4000.

Figure 1: Set up of equipment for recording noise

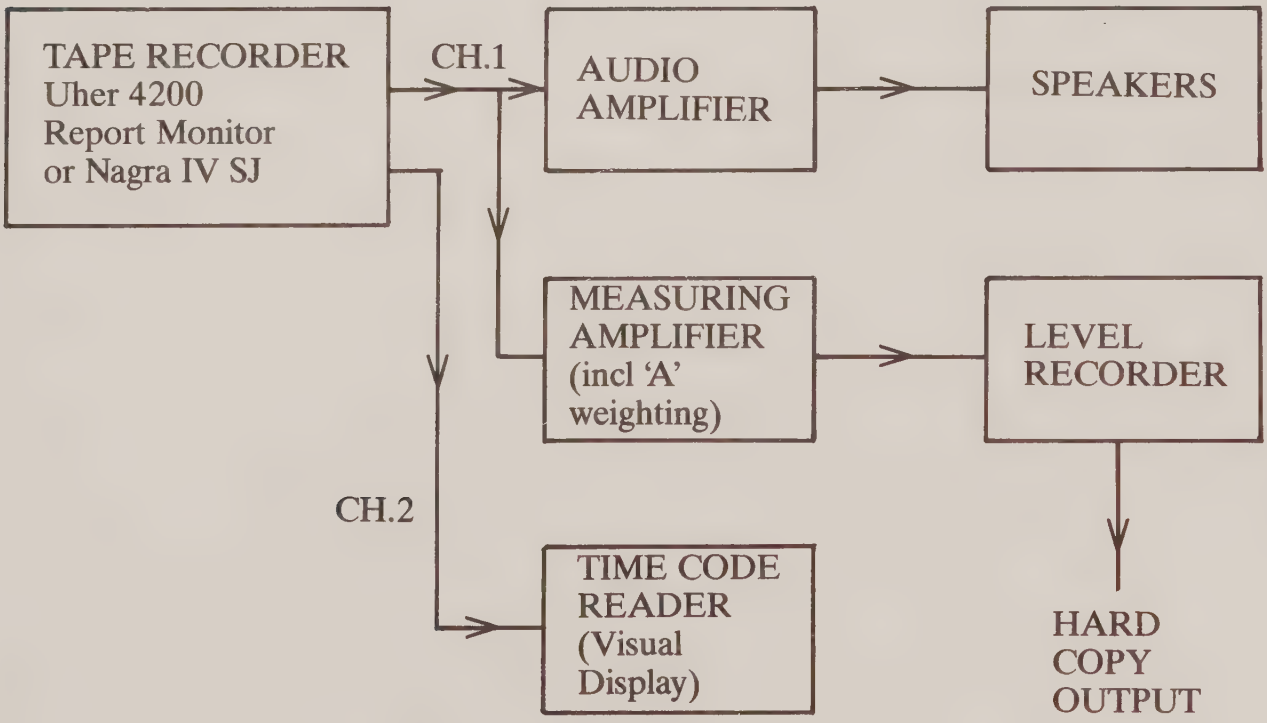
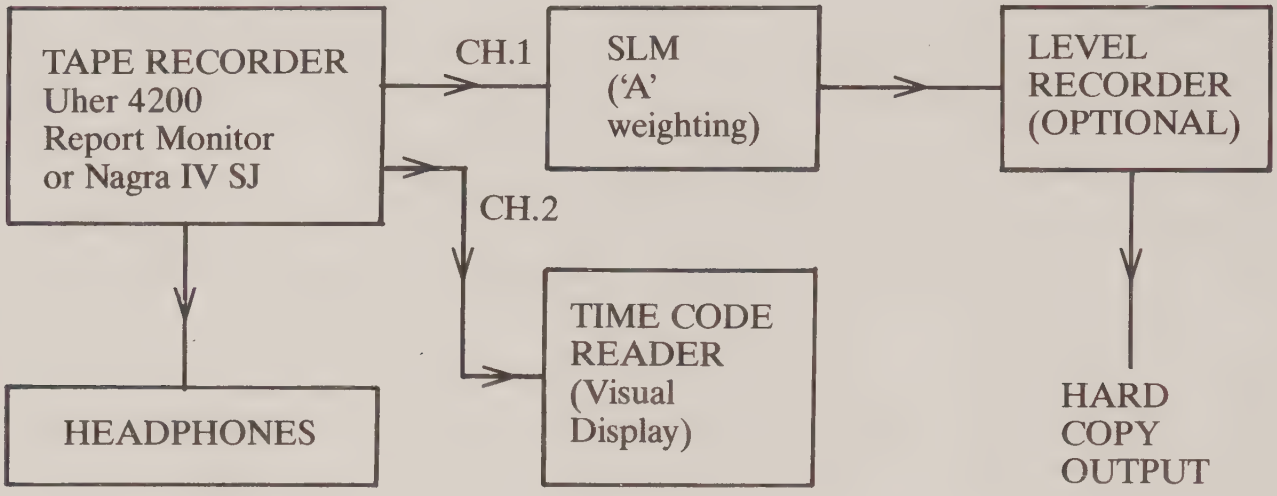


Figure 2: Equipment used for analysis



Approx Costs: Headphones £100, Time Code Reader £500; B&K Level Recorder (Optional) £4500;
SLM — most local authorities should have a suitable meter;
Total, excluding Level Recorder, £600.

Figure 3: Alternative system for analysis using a standard sound level meter for signal conditioning and processing

offences of noise nuisance from barking dogs by a magistrates court. The objective evidence presented by Birmingham Environmental Services Department was solely based on that obtained from a tape recorder left on site, under the control of a complainant. Before an appeal was heard in the High Court, Counsels representing both the City Council and the defendant listened to the tape recorded evidence in our laboratory. *This evidence was not contested at any stage.*

Conclusion

The technique of using tape recorders to investigate domestic noise complaints has now been used extensively in Birmingham since the beginning of 1990. Results from the first half of 1991 indicate that now this monitoring technique is being more extensively used by Birmingham's Environmental Health Officers, over 30 per cent of the investigations carried out in this manner were concluded by simply offering to carry out a noise monitoring exercise. It is reasonable to assume that these complaints either concerned domestic disturbances which were of a very temporary nature, or were simply unjustified or malicious in the first instance. A great deal of time and effort would have been wasted investigating these complaints by means of out of office hours visits. Recent results suggest that only around 20 per cent of complaints concerning intermittent noise disturbance originating from domestic premises actually warrant any formal action on the part of the local authority.

This paper has been prepared in an effort to show that local authorities can investigate, and deal more effectively and efficiently with, the ever increasing number of

domestic noise complaints by adopting modern tape recording techniques. It demonstrates that with minor modifications, the technology is available and that the equipment costs are not excessive. For example, a very basic field and laboratory system would cost no more than £4600 provided the authority in question already has a sound level meter and calibrator. The author suggests that authorities should consider investing in this type of equipment as an alternative to extremely expensive sound and frequency analysers, which are generally of no use for investigating domestic noise complaints. After all, the available evidence suggests that of all the sources of noise that presently bombard us in our day to day lives, the general public are most concerned with noise disturbance from domestic premises.

The paper also demonstrates that, contrary to some opinion, tape recorded evidence, if properly documented and supported by statements of evidence, will be accepted in court in connection with domestic noise complaints. However, it should be borne in mind that during the 18 month period from 1 January 1990 - 30 June 1991, only 12 prosecutions resulted from 210 separate investigations. This shows that using the technique described, most complaints are resolved at a very early stage because hard evidence is obtained which does or does not substantiate the existence of a nuisance.

The views and opinions expressed in this paper are those of the author and not necessarily those of Birmingham Environmental Services Department.

Acknowledgements

The author would like to acknowledge the work of Mr A.S. Jellyman who designed and constructed the dedicated time code generators and reader used in Birmingham.

References

1. Environmental Health Officers Association, Environmental Health Report 1987/88.
2. Disturbance Caused by Neighbourhood Noise, W.A. Utley. Presented at 56th Conference of National Society for Clean Air, 1989.
3. Automatic Noise Monitoring — An Alternative Approach, Mr J. Hinton MIOA and Mr A.S. Jellyman, Birmingham Environmental Services Department. Presented to the Institute of Acoustics, May 1987. Developments in Instrumentation and Computing in Acoustics.

ASSESSING NUISANCE CAUSED BY AMPLIFIED MUSIC

L C Fothergill
Building Research Establishment, Watford, WD2 7JR

Introduction

Traditionally, the decision on whether or not a noise is a "nuisance" is a subjective assessment made by an environmental health officer (EHO). However, an objective method could often be useful to support a judgement of what is considered a nuisance, for example when a decision is disputed. The Open University has recently completed a contract for the Department of the Environment, under the direction of the Building Research Establishment, to develop an objective method for use when assessing the disturbance caused by amplified music emanating from a neighbouring dwelling.

The method was developed after analysis of 29 case studies, and the next step is to establish its usefulness and accuracy by a field trial. The purpose of this paper is to describe the method and invite volunteers to participate in the field trial.

The Method

The method takes account of:

(a) the difference between the disturbing noise level and the background noise level;

(b) the time of day the disturbance occurs;

(c) the duration of the disturbance;

(d) bass prominence of the disturbing noise.

To use the method:

1. measure the level of the disturbing music L_d dB(A) (S time weighting);
2. measure the background noise level L_b dB(A) (S time weighting) when the disturbing noise is not present but at about the same time of day;
3. note appropriate corrections in (i), (ii) and (iii) below.

(i) Time of day disturbance occurs

day:	09.00-19.00	0
morning:	07.00-09.00	+5
evening:	19.00-23.00	+5
night:	23.00-07.00	+10

(ii) Duration of disturbance

> 2 hours	0
45 min-2 hours	-5
20-45 min	-10
< 20 min	-15

(iii) Bass prominence

not prominent	0
noticeable	+5
very prominent	+10

4. calculate correction term L_c by summing the three correction values determined in (i), (ii) and (iii).
5. obtain disturbance rating L_{dc} from:

$$L_{dc} = L_d - L_b + L_c$$

Interpretation

The OU study has suggested the following interpretation of the L_{dc} value:

$L_{dc} > 10$ complaint justified;
$L_{dc} < 5$ complaint not justified;
$5 < L_{dc} < 10$ judgement needed.

The Next Step

This procedure requires further validation before it can be offered as a reliable method for assessing the validity of complaints, and EHO volunteers are sought to participate in this stage. These volunteers will be asked to assess a reasonable number of noise complaints in their usual way, and also using this method. They will also be asked to comment on any discrepancies in the assessments and to suggest how the method could be improved.

If you would like to participate in this trial please contact Tim Brown at the NSCA (136 North Street, Brighton BN1 1RG) who will provide further information.

Reference

1. A Watson, Jeanette Brooks and K Attenborough, An investigation of amplified music disturbance in dwellings. Proc IoA Vol 13 Part 8 (1991) 303-310.

UPDATE

CLLR LEN POOLE

NSCA congratulates Cllr Len Poole who is to be made a Freeman of the Borough of Middlesbrough in honour of his "eminent services" to the area. Len, who is a past President and past Chairman of the Council of NSCA, has been a councillor for over 35 years; he was Chairman of Middlesbrough Council's Public Protection Committee for 18 years until he stepped down in 1991.

EARLY PHASE-OUT OF CFCs

EEC Ministers have agreed to advance the date for the phasing out of CFCs to 31 December 1995 — 18 months earlier than originally planned. CFCs covered by the new agreement include CFCs 11, 12, 113, 114 and 115 and other halogenated CFCs.

GREEN RIGHTS AND RESPONSIBILITIES

In line with the Government's policy of promoting citizen's charters, Environment Minister, Michael Heseltine launched at the end of February, a citizen's guide to environmental rights and responsibilities. The 30 page guide covers the local environment (e.g. refuse collection, litter, noise, nuisance and recycling), pollution control, air, water, land and the green consumer. The guide sets out who is responsible for each area, what citizens can do and where to go for further information.

The booklet has been sent to all local authorities in England, libraries, environmental groups and the top 1,000 companies. Copies are available direct from the DoE, Room A1.27, Romney House, Marsham Street, London SW1P 3PY.

ENVIRONMENTAL LAW FOUNDATION

Established at the end of January as a non-profit making company, the ELF aims to provide legal and scientific help to individuals and groups faced with an environmental threat — from polluting factories to excessive noise from a recreational facility. The Foundation consists of a network of lawyers, scientists and experts. People/groups can contact the ELF for advice on an environmental issue — an initial consultation is free of charge; if the ELF agree that there is a case, they will put the applicant in touch with a lawyer who can help. It is hoped that network lawyers will be able to keep their charges to legal aid charges.

For further information, write to the ELF at King's College London, Atkins Building, Campden Hill Road, London W8 7AH. Telephone: 071 333 4100.

CONTAMINATED LAND REGISTERS

The Department of the Environment has announced that setting up of the registers of contaminated land is to be postponed indefinitely; draft regulations issued for consultation last year on the form of the registers had been expected to come into effect on 1 April this year, with the registers being opened to the public from 1 April 1993. A num-

ber of reasons have been put forward for the postponement, not least fears of property blight on sites included in the register.

However, section 143 of the *Environmental Protection Act* enabling the Secretary of State to bring forward regulations on contaminated land registers was brought into force on 14 February in England and Wales by Commencement Order No. 11.

NOISE FROM NEIGHBOURS

Noise from neighbours, particularly amplified music, is now the most widespread source of disturbance. For many years, the Building Research Establishment has been involved in research on measurement of human response to neighbourhood noise as well as construction techniques for achieving high standards in sound insulation.

As a result of its research, BRE has published a new leaflet called *Improving Sound Insulation in Your Home.* This provides practical guidance for people bothered by neighbourhood noise, both on installing sound insulation and on taking legal action.

Copies of the leaflet are available from the BRE Bookshop, Garston, Watford WD2 7JR, price £2 each. Enquiries for prices for bulk orders should be made to the BRE.

BUILDING REGULATIONS 1991

These Regulations come into effect on 1 June 1992, replacing the 1985 Regulations and consolidating subsequent amendments. As a result most of the Approved Documents which accompanied the 1985 Regulations have also been revised, including Approved Document E which covers airborne sound (walls) and airborne sound (floors and stairs), and impact sound (floors and stairs). In particular, the main amendments from the 1985 edition relate to conversions, kitchens, stairs, performance for different kinds of construction, and test procedures.

The Regulations and the Approved Documents are available from HMSO.

CALIFORNIA PETROL EMISSION STANDARDS

In November 1991, the California Air Resources Board agreed strict pollution standards for petrol thought to be the toughest in the world. As from 1996, olefins must be cut by 50 per cent, aromatic hydrocarbons by 25 per cent, sulphur by 80 per cent and benzene by 50 per cent. Refiners will have the option of meeting flat limits for every gallon of petrol or averaging the ingredients of their petrol over a 90 day period. *(J. Air Waste Management Assoc.)*

POLLUTION MONITORING

The Government's new Urban Air Quality Monitoring Network became operational in January with the opening of sites in London, Cardiff, Edinburgh, Belfast, Birmingham and Newcastle.

Three more sites are to be added to the network next year. The network is to be extended to 24 sites (including the ten national monitoring sites already in existence) over the next few years.

The network will start by measuring nitrogen dioxide, sulphur dioxide, carbon monoxide and ozone automatically at each site. The network will also be monitoring airborne fine dust or 'black smoke' for the first time in this country and will soon include six sites measuring hydrocarbons such as benzene.

The network is highly decentralised, and the actual monitoring sites will be operated by the environmental health department of each city's local authority. The Government's main contractors, Rendel Science and Environment, will operate the central management and co-ordination unit.

The Government has also initiated an urban air quality review which will have three independent advisory committees of experts:

- The Quality of Urban Air Review Group will look at all UK monitoring networks and data, recommend changes, and identify gaps in our understanding of urban pollution and its control.
- The Advisory Panel on Air Quality Standards will advise on ambient air quality guidelines and targets for the UK.
- The Committee on the Medical Effects of Air Pollution will work closely with the other groups. It will advise on the effects of the levels of UK air pollution on health and will recommend any action for sensitive individuals.

WASTE: DUTY OF CARE

As from 1 April 1992 anybody who produces, imports, stores, treats, processes, transports, recycles or otherwise disposes of controlled waste is subject to the duty of care provisions of the *Environmental Protection Act 1990.* This requires that all those covered by the duty of care ensure that waste is not illegally disposed of or dealt with in breach of licence conditions; that it does not escape (ie is stored safely and securely); that it is transferred only to an authorised person (eg registered waste carrier, council waste collectors); and that when it is transferred to another person, it is accompanied by the correct transfer documents. The duty of care does not apply to householders disposing of their own household waste.

The *Environmental Protection (Duty of Care) Regulations 1991,* which apply in England, Scotland and Wales, provide for a mandatory system of signed transfer notes and require all those subject to the duty of care to keep records of waste received and transferred.

A statutory code of practice giving practical guidance on how to discharge the duty of care has been prepared by the DoE and Welsh Office, with a similar code prepared by the Scottish Development Department. While breach of the code is not itself an offence, it is admissible in court as evidence in deciding whether a breach of the duty of care has occurred.

If found guilty of breaching the duty of care or the regulations, there is a maximum fine of £2,000 in the magistrates court (crown court — unlimited); the dumping of waste or treating it without a licence will also result in a maximum £2,000 fine in the magistrates court — £20,000 and/or 6 months in prison from April 1993, and an unlimited fine and/or 2 years imprisonment from a crown court.

TAX TREATMENT OF FEES AND CHARGES

The Department of Environment have consulted the Inland Revenue on the tax treatment of fees and charges paid by operators of prescribed processes. The following note, prepared by the DoE Air

Quality Division summarises the position.

The Inland Revenue's Business Profits Division has provided the Department of the Environment with the following advice on the tax treatment of fees and charges paid by operators of prescribed processes under Part I of the Environmental Protection Act:

Authorisation to Operate a Particular Process

The authorisation granted by the enforcing authority to operate a particular process would be regarded as a capital asset of the trade (for example, the licence held by a publican or taxi driver to carry on his trade). Accordingly, the expenditure incurred in obtaining the initial authorisation where no previous right to undertake the process existed, whether in respect of the application itself or incidental costs, would be capital and therefore not deductible for tax purposes in computing the profits of the trade.

If, however, an operator did have an existing right (under the previous arrangements to undertake the processes which were in place before the new regulations) expenditure incurred in acquiring the requisite authorisation would be treated as revenue, since the operator would not be acquiring a new asset but only authority to continue an existing right. (As a general rule under tax law, only those expenses which are revenue — not capital — in nature and which are incurred wholly and exclusively for business purposes may be allowed as a deduction in computing profits for tax purposes.)

Annual Charge

The annual subsistence charge would be an allowable expense since this simply maintains the capital asset in its existing state.

Substantial Variation Fees

The tax treatment of substantial variation fees will depend upon the particular facts of each case. For example, expenditure incurred by an operator who wished to undertake changes to an existing process would probably be capital in nature and therefore not allowable because it would be seen as improving an existing asset. On the other hand, if the expenditure on the change arose from a tightening of standards by the enforcing authority, the operator would arguably be doing no more than protecting his existing authorisation. If so, the expenditure would be allowable.

BOOKS AND REPORTS

MANUAL OF ENVIRONMENTAL POLICY: THE EC AND BRITAIN

Nigel Haigh. Longman in association with the Institute for European Environmental Policy. 1991. £140. ISBN 0 582 08715 5.

This loose leaf manual replaces Nigel Haigh's invaluable book *EEC Environmental Policy and Britain* and as such it largely follows the same format. An early chapter summarises the way EC environmental policy is made and the various institutions of the EC. In the subsequent subject chapters, UK policy is summarised; there are full details of all EC Directives, Regulations, etc., and some of the "history" — or background — to their adoption, and the way in which they have been implemented and incorporated into UK legislation. It is to be hoped that the publishers will be able to process and circulate the planned updates promptly, thus ensuring the manual is completely up-to-date and confirming its place as *the* essential guide to EEC environmental policy to have on your bookshelf.

CRONER'S ENVIRONMENTAL MANAGEMENT

Croner Publications Ltd. 1991. £124 (inc. one year's amendments). ISBN 1 85524 115 3.

The second in the recent epidemic of loose leaf manuals aims to provide an overview of environmental issues — both legislative and conceptual; there are sections on environmental performance with relation to business (audits, assessments, green policies, BATNEEC); pollution control generally (air, land, water, radiation, noise, pesticides); waste; planning and hazardous substances legislation; there is also a section on the UK and EEC systems of environmental control and enforcement and administrative responsibilities. The first edition of the manual is current to October 1991 and four updates a year are planned.

CRONER'S WASTE MANAGEMENT

Croner Publications Ltd. 1991. £123.90 (inc. one year's amendments). ISBN 1 85524117 X.

This third loose leaf manual to come our way recently is current to November 1991 and again four updates a year are planned. The manual is described as a first point of reference for all those responsible for dealing with waste; part 1 details UK and EC legislation on industrial waste management and part 2 advice on practical waste management; part 3 gives information on how to deal with hazardous wastes and part 4 is a very useful directory of entries covering all aspects of waste management. This manual is not quite so straightforward to use as *Croner's Environmental Management.* For instance

although part 1 deals with legislation on waste management, that relating to radioactive waste disposal is in part 2; clinical waste — an area of increasing importance to, in particular, local authorities — hardly gets a mention.

Again, the value of both the Croner manuals will depend on the publisher's ability to circulate completely up-to-date amendments and additions promptly.

ENVIRONMENTAL LAW: A PRACTICAL HANDBOOK

J. Garbutt, Chancery, 1992. £18.95. ISBN 1 85630 027 7.

This book aims to provide lawyers, professional advisors and those within specific industries affected by environmental legislation with an accurate, up-to-date and practical guide to the present state of the law. It is intended to provide the reader with the basic information needed to understand the legislative framework; water, air pollution, waste, hazardous substances and noise are covered. In the preface the author stresses that this is a "handbook or short guide" and as such "does not pretend to be a definitive treatise. . ." Regrettably this has led to a few rather sweeping and misleading statements. For instance in introducing the chapter on air pollution and IPC, Mr. Garbutt says "Atmospheric pollution control has its roots in the long established Alkali etc. Works Regulation Act 1906, but was considerably modified by the Clean Air Acts 1956/68 and the Control of Pollution Act 1974. Certain other modifications derived from the Health and Safety at Work etc. Act 1974. All these acts are being swept away following the passage into law of the Environmental Protection Act 1990 Part I." In fact of these the only Act being "swept away" is the Alkali Act!

FREIGHT TRANSPORT AND THE ENVIRONMENT

Ed. M. Kroon, R. Smit, J. van Ham. Elsevier, 1991. $133.50. ISBN 044488770 9.

The proportion of air pollution due to freight transport is increasing, as is the demand for the quick and flexible movement of goods. This study covers the environmental impact of goods transport, emissions reduction technology and the feasibility of alternatives to road transport.

FATE OF PESTICIDES AND CHEMICALS IN THE ENVIRONMENT

Ed. J.L. Schmoor. Wiley, 1991. £109.00. ISBN 0471502324.

With contributions from many leading research scientists in the USA and former USSR, the book looks at deposition and transport, physical — chemical processes, microbial transformations and modelling of pesticides and chemicals. It provides a summary of recent research in the field.

FRONTIERS OF ENVIRONMENTAL LAW

Ed. O. Lomas. Chancery, 1991. £21.95. ISBN 1856300188.

'Environmental Law' is a new and expanding area. This book sets out to give an overview of emerging issues with contributions from experts in the field. Discussion of the probable legislative agenda for the 1990s includes corporate strategies, EC regulations and freedom of environmental information.

MINERAL FIBRES AND HEALTH

D. Liddell, K. Miller. CRC, 1991. £131.00. ISBN 0849366461.

The book reviews the effect of mineral fibres on human health. Chapters from experts across the field look at occurrence, properties, epidemiology and exposure, covering the occupational and non occupational environment.

ENVIRONMENTAL TECHNOLOGY: COMPETING IN A GROWING MARKET

KPMG. CBI, 1991. £5.00.

The report presents a summary of the results of a survey and conference aimed at identifying the issues which companies need to address and act on if they are to successfully exploit the market for environmental technology. It finds that legislation and its enforcement are the major forces behind the market and that companies are confident they can establish themselves in Europe.

CATALYSIS AND AUTOMOTIVE POLLUTION CONTROL II

Ed. A. Crucq. Elsevier. 1991. $197.50. ISBN 0444887873.

Proceedings of the second symposium on Catalysis and Automotive Pollution Control. It takes in a general overview of pollution control followed by fundamental and applied studies, with emphasis on catalytic converters.

THE ENVIRONMENTAL IMPACT OF THE CAR

Greenpeace, 1991. £5.00.

A report covering pollution from vehicles, historical and future trends, the environmental impact of the oil industry and of the motor industry and road safety. It provides an overview of all aspects of the impact of the car on our environment. The conclusions drawn are that the adverse effects of our love affair with the car can only be alleviated by applying the polluter pays principle and effective planning to reduce the need for travel.

BIKES NOT FUMES

A. Rowell, M. Fergusson. Cyclists Touring Club, 1991. £8.00.

Currently 75 per cent of journeys in Britain are under five miles in length and 61 per cent of these are car journeys. This report sets out to show that increased cycle use can reduce pollution. Research suggests that with appropriate policies to encourage cycling, 40-50 per cent of non-walking journeys could be undertaken by bicycle, and this could significantly reduce pollution. The study concludes with detailed policy recommendations to encourage increased cycle use in the UK.

HANDBOOK OF POLLUTION CONTROL PROCESSES

R. Noyes, Noyes, 1992. $127. ISBN 0815512902.

A concise overview of state of the art technology for pollution control. Aimed at anyone concerned with solving environmental problems.

CLEANING UP MOTOR CAR POLLUTION: NEW FUELS AND TECHNOLOGY

C. Cragg, Financial Times, 1992. £221. ISBN 1853341584.

A comprehensive and lively examination of motor vehicle pollution, looking at established fuels, refining technology and fuel efficiency and the cost, efficiency and resource base of alternative fuels. The impact of an increasing vehicle population is assessed and the necessity of a change in consumer and government attitudes — "the motor vehicle is easy to hate if it belongs to somebody else".

The report concludes that however sophisticated automotive technology and refining skills become, air quality cannot improve without a decrease in car ownership.

THE EUROPEAN POLLUTION CONTROL AND WASTE MANAGEMENT INDUSTRY DIRECTORY

Ecotec, Frost and Sullivan, 1992. £255. ISBN 086354890.

Details of 5500 pollution control and service suppliers in 17 European countries, with a classified index of products and services.

WASTE AND POLLUTION: THE PROBLEM FOR BRITAIN

K. Mellanby, Harper Collins, 1991. £12.99. ISBN 0002191822.

'This is the book that claims that the threat of pollution has been overstated' according to the blurb. Professor Mellanby takes the stance that environmental problems are not as bad as some experts make out. He states that the ozone layer has been seriously damaged in the past with no observed ill effects, importation and disposal of hazardous waste in Britain is to be encouraged for economic and environmental reasons and our toxic waste can provide a habitat for endangered species. An interesting read.

BRITISH STANDARD SPECIFICATION FOR DOMESTIC SOLID MINERAL FUEL-FIRED, FREE-STANDING COOKERS WITH OR WITHOUT BOILERS, BS 1252

Available from BSI Standards, Linford Wood, Milton Keynes MK14 6LE

Revised standard with changes covering exclusion of asbestos products and the introduction of a standard classification system for cookers (including handy specifications for BS rhubarb tart).

ENERGY CONSCIOUS PLANNING

Dr. S. Owens, CPRE, 1991. £8.00.

A report that looks at the role land use planning has to play in the achievement of long term sustainability — covering energy efficient development, development trends and policy responses and energy conscious planning. Policy recommendations include action by central government and a set of recommendations for those involved in forward planning and development control.

FUTURE EVENTS

5 MAY — LOCAL EXHAUST VENTILATION WORKSHOP
COSHH regulations require that Local Exhaust Ventilation (LEV) systems controlling the movement of airborne dust and fumes are inspected regularly and tested every 14 months. This workshop explains the principles involved and the practical procedures that need to be followed. Fee £95.
Venue: OEH Scientific Ltd, Birmingham.
Details: Janet Webber, Janet Webber PR. Tel: 071 245 1994.

6 MAY — HEALTH BEYOND THE FACTORY FENCE
Organised by the Industrial Health and Safety Group of the Society of Chemical Industry, this one day conference will review the principles upon which acceptable health based emission standards are set and examine the differing ways in which concerns over health risks can be observed, perceived and resolved.
Venue: SCI, 14/15 Belgrave Square, London SW1X 8PS.
Details: SCI Conference Secretariat. Tel: 071 235 3681.

12-15 MAY — THE MITIGATION OF TRAFFIC NOISE IN URBAN AREAS
The symposium will address the following themes; Vehicle noise reduction, traffic management and planning, low noise road surfacing, noise barriers, urban planning and building design, traffic noise reduction and city management.
Venue: Palais des Congrès de Nantes, France.
Details: Palais des Congrès. Tel: +33 4035 3020.

20-21 MAY — LOGISTICS AND THE ENVIRONMENT
Papers will address the key issues involved in warehousing and distribution with examples of best practice; packaging legislation and its implications for retailers and distributors; practical issues such as 'Green' partnership sourcing, environmental management systems and civil liability insurance will also be addressed.
Venue: Cranfield Institute of Technology.
Details: Conference Organiser, Cranfield Institute of Technology. Tel: 0234 750323.

1-2 JUNE — ENVIRONMENTAL MANAGEMENT STANDARD
This conference will explore the background and requirements of this new British Standard, the routes to certification and the environmental legislation to be taken into account.
Venue: Portman Inter-Continental Hotel, London W1.
Details: Amanda Wright, IBC Technical Services Ltd. Tel: 071 637 4383.

7 JULY — ENGINE EMISSIONS MEASUREMENT
A short course to explain the function of heated on-line gas analysis systems for CO_2, CO, O_2, UHC, NOx, and SO_2 measurements from engines, demonstrated by a working system with data-logging onto a computer. Computer processing of gas analysis measurements to derive air/fuel ratios, combustion efficiency, temperature and various pollution parameters will be discussed.
Venue: University of Leeds.
Details: Dianne Taylor, University of Leeds. Tel: 0532 332511.

7-10 JULY 1992 — LIVING WITH INDUSTRY — THE NEXT TEN YEARS
Sessions will look at the past and present relationships between the urban environment and the quality of life; the role of local government in monitoring, managing and improving local environments — the European experience; environmental awareness raising and understanding; case studies; and the responsibility of industry towards the environment.
Venue: Huddersfield Polytechnic.
Details: Dr A S Trescott, Huddersfield Polytechnic. Tel: 0484 422288 ext 2349.

16-18 JULY — CHEMISTRY, AGRICULTURE AND THE ENVIRONMENT
Management of the use of agrochemicals and related materials is a matter of growing concern throughout the world. The aim of this conference is to provide a forum for agrochemical producers, risk assessment professionals, regulators, and academics, and all those with an interest in the safe and effective use of agrochemicals.
Venue: University of Surrey, Guildford.
Details: The Robens Institute of Health and Safety. Tel: 0483 509220.

14-17 SEPTEMBER — ENVIRONMENTAL HEALTH CONGRESS AND EXHIBITION
The theme 'Towards a safer future' reflects the fact that the European Year of Safety, Hygiene and Health Protection at Work commenced in April 1992. Papers to be presented include the Social Charter on health and safety; training in health and safety; health and safety, the local authority role; risk assessment and health and safety in the leisure industry. There will also be papers covering food and general health, housing, pollution control and environmental health policy and management.
Venue: Bournemouth International Centre.
Details: Laura O'Keeffe, IEHO. Tel: 071 928 6006.

21-23 SEPTEMBER — INCINERATION AND ENERGY FROM WASTE
A short course providing a detailed introduction to the incineration process in all its aspects and associated problems. Specialist lectures on the theory and practice of incineration including combustion, incinerator design, refractories and pollution will be combined with industrial experience of incineration of different types of waste.
Venue: University of Leeds.
Details: Dianne Taylor, University of Leeds. Tel: 0532 332511.

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INTERNATIONAL ASSOCIATION AGAINST NOISE (AICB)

17th International Congress
PRAGUE, 23 - 25 JUNE 1992

The 17th International Congress of the International Association Against Noise is to be held at the Technical University of Prague, Czechoslovakia.

The conference aims to foster East-West cooperation on noise control standards and guidelines. Discussions will focus on noise impact on the environment; noise from transport and industry; economic aspects; noise reduction; planning and noise.

For further details contact: Congress Secretariat, Czech Technical University, Faculty of Civil Engineering, Thakurova 7, CS - 166 Prague. (attn. Dipl. Ing Karel Novotny).

INTERNATIONAL UNION OF AIR POLLUTION PREVENTION ASSOCIATIONS

9th WORLD CLEAN AIR CONGRESS
QUEEN ELIZABETH HOTEL, MONTREAL, CANADA
30 AUGUST - 4 SEPTEMBER 1992

The 9th World Clean Air Congress of IUAPPA provides a unique forum for pollution control professionals to exchange views and knowledge on a wide range of air pollution and related issues. Subjects to be covered include atmospheric deposition, indoor air pollution, transport and waste management issues, risk assessment, emissions inventories and dispersion modelling.

For a copy of the programme and registration details contact Sally May at the NSCA, 136 North Street, Brighton BN1 1RG. Tel: 0273 26313.

nsca

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EDITORIAL

FROM BACKYARD TO BIOSPHERE — AND BACK AGAIN

The Earth Summit has come and gone. National administrations and their non-governmental (NGO) shadows from all over the world have ground their axes. As a leading UK NGO, NSCA made its own contribution to the groundwork of preparatory processes and consultations which led up to the Summit. And while the Earth may not have moved noticeably at Rio, national leaders now have a much clearer view of where responsibility for environmental protection lies at all levels, from global to individual. They know what bargains are needed even if they could not strike them in Brazil. They know where there must be trade-offs, even if adjustment has barely started.

The new institutions and mechanisms agreed at Rio will further the process of international agreement and co-operation, give or take the odd upset. The draft fifth EC Action Programme for the Environment is already setting the stage for Europe, and it would be a tragedy if the UK presidency were to compromise EC environmental policymaking as a post-Maastricht expedient.

In the UK the new Government and NGOs must develop a national sustainability plan which integrates economic, social and environmental objectives. We need to agree targets for change, identify those responsible for making the changes, monitor their performance, and revise plans if they do not deliver.

The new survey of the implementation of Part One of the *Environmental Protection Act*, jointly undertaken by NSCA and the Association of Metropolitan Authorities (see this issue), is a contribution to this process. As the national framework for environmental protection develops, so programmes of action at regional and local level will fall into place. The survey indicates that local authorities have risen to the challenge of new responsibility and — subject to reorganisation — are well placed to provide a focal role in managing local environmental impacts.

Despite Rio, the environment appears to be slipping down the public's priority list. The development of local environmental plans which involve all the players — industry, transport, agriculture, the regulatory authorities, local government, and others — has the potential to capture public imagination and engage their support for environmental protection. We can only protect the global biosphere if we tidy our own backyards with real enthusiasm.

ENVIRONMENTAL PROTECTION 1992

The 59th NSCA Annual Conference and Environmental Protection Exhibition will be held in the Bournemouth International Conference Centre. Each year the Conference addresses a wide range of environmental issues, covering the fields of air pollution, noise, waste disposal, energy policy and more.

59th NSCA ENVIRONMENTAL PROTECTION CONFERENCE AND EXHIBITION

Environmental Protection - Making it Happen

Environmental Protection Act Update
Waste Management - Cradle to Grave
Environment and Development
Planning and Noise
Environmental Management Systems
Radon - Counting the Cost
Transport Options
Water Quality - the Way Ahead
Air Quality Monitoring and Health

Bournemouth 19 - 22 October

For further information about the Conference contact -
NSCA - 136 North Street - Brighton BN1 1RG
Telephone: 0273 26313 Fax: 0273 735802
For information about the Exhibition contact -
Westrade Fairs - 28 Church Street - Rickmansworth WD3 1DD
Telephone: 0923 778311 Fax: 0923 776820

NSCA NEWS AND VIEWS

IMPLEMENTATION OF THE ENVIRONMENTAL PROTECTION ACT 1990, PART I

The *Environmental Protection Act 1990* introduced new responsibilities for local authority air pollution control. The National Society for Clean Air believes it is important that progress on implementation of EPA Part I should be monitored independently. This survey was undertaken in collaboration with the Association of Metropolitan Authorities to provide information about experience to date which will assist the continuing discussions about the effectiveness of the new legislation and its resource implications for local authorities.

The survey was undertaken in England and Wales during May 1992. (Scotland was not included as implementation of Part I of the EPA did not commence until 1 April 1992.) NSCA and the AMA would like to thank all those authorities who took the trouble to respond.

Total District Councils responding	**227**
Total no. District Councils	**296**
Return Rate	**77%**
Total Metropolitan Authorities responding	**59**
Total no. Metropolitan Authorities	**69**
Return Rate	**85%**

PROCESS APPLICATIONS

As at 1 April 1992:

Block One Processes
(applications due 1 Apr-30 Sep 1991)

Number of duly made applications received:	2425
Number of authorisations issued:	620
Estimated total number of Block 1 processes in survey:	3038
Average no. processes per District authority	10-11
Average no. processes per Metropolitan authority	15-16

Block Two Processes
(applications due 1 Oct 1991-31 Mar 1992)

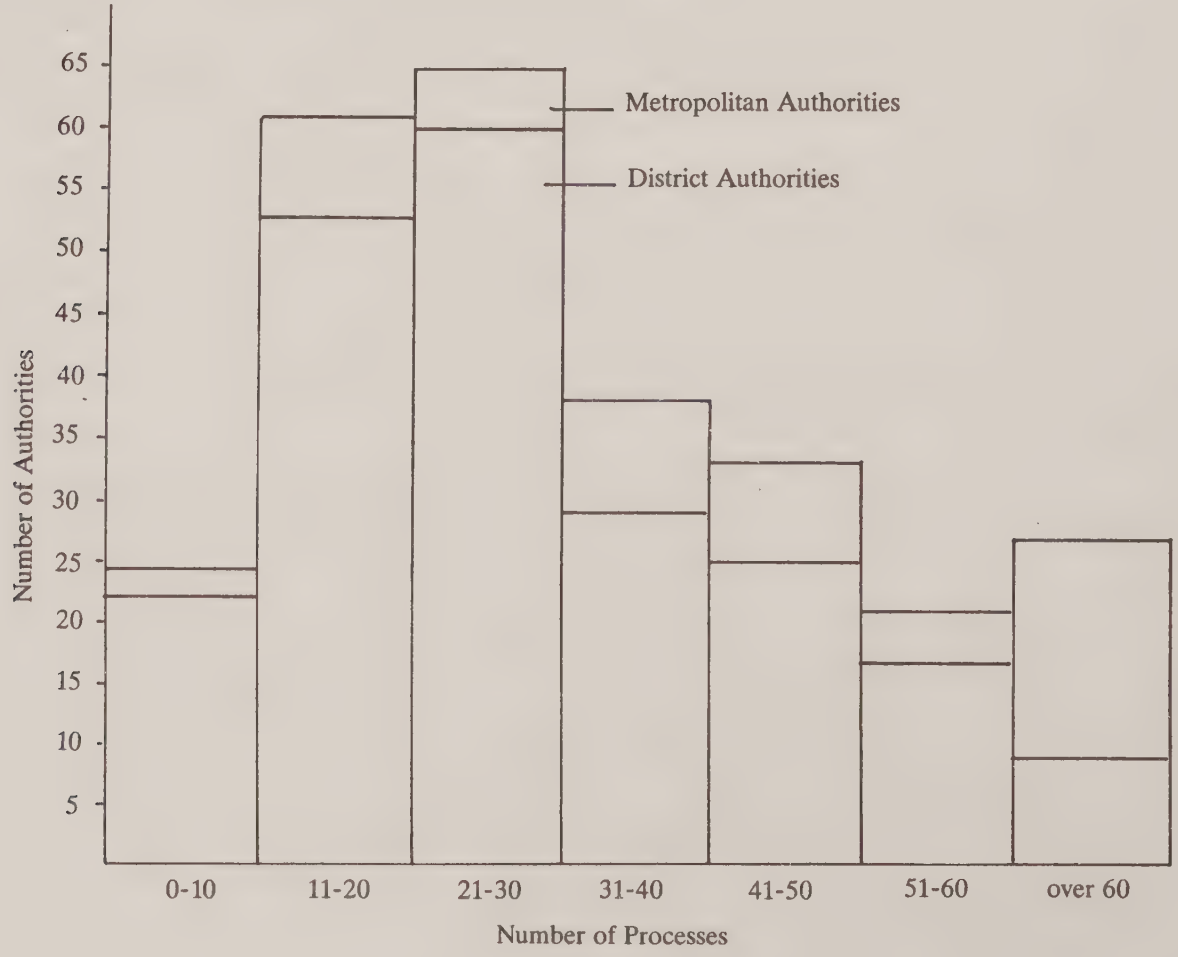
Number of duly made applications received:	2580
Number of authorisations issued:	52
Estimated total number of Block 2 processes in survey:	2987
Average no. processes per District authority	8-9
Average no. processes per Metropolitan authority	15-16

Block Three Processes
(applications due 1 Apr-30 Sep 1992)

Estimate of total number of Block 3 processes in survey:	3349
Average no. processes per District authority	10
Average no. processes per Metropolitan authority	23

Comment: The calculated total average of 29 processes per District and 54 per Metropolitan Authority would, if reflected across the board, suggest a total of around 12,300 Part B processes in England and Wales. Since many respondents note that they do not have the resources to seek out recalcitrant processes, this figure must be regarded as an underestimate.

Distribution of Processes: Numbers per Authority



Adequacy of Information

Initial applications returned as not duly made, because of inadequate information:

all	5
most	16
about half	37
few	145
none	79

EXPERIENCE IN OPERATION

Overall staffing levels for EPA Part I air pollution control tasks are:

more than adequate	1
adequate	97
inadequate, but able to cope	138
inadequate, unable to cope	41
not known	8

Additional posts have been created for this work:

YES	127
NO	157

The work has been undertaken at the expense of other environmental health work:

YES	184
NO	90

Outside consultants have been employed in the authorisation procedure:

YES	14
NO	266

If no, would you consider using consultants in the future:

YES	110
NO	148

COST RECOVERY

To cover the costs involved, the proposed 1992/3 initial application fee of £900 is considered:

more than adequate	6
adequate	136
inadequate	134
not known	9

The proposed 1992/3 annual subsistence fee of £550 is considered:

more than adequate	21
adequate	164
inadequate	93
not known	7

PROSECUTIONS FOR FAILURE TO APPLY

Number of prosecutions:	pending	36
	proved	1*
	dismissed	0

*Fine £2500, Costs £100

ACCESS TO INFORMATION

Public registers of applications and authorisations are:

	well used	6
	little used	148
	not used	126
	not known	6
Registers:	paper based	276
	computer based	19

Comment: Some authorities employ both systems, or are in the process of change.

Charge for copies per sheet:	average	20p
	most	£1.00
	least	nothing
Per application:	average	£3
	most	£20

Comment: The majority of local authorities charge 50p or under per sheet for copies of applications. Some have minimum charges, or charge per application. Local authorities report that there has been scant public interest in applications and that more publicity is needed. Some report that only consultants or competitor companies have requested to see applications.

ADDITIONAL COMMENTS

Publicity

Industry is perceived to have been poorly informed about the new legislation and requirements under it. Better publicity would have been helpful. Local authorities do not have the resources to seek out processes so in many cases numbers cited are under estimates. Waste oil burning and paint spraying operations are particularly difficult to track down.

Training and Guidance for Officers

Many authorities complained that there was a lack of central training and guidance, and therefore no uniformity of approach between authorities. Some authorities expressed concern at differences in interpretation of duties. Small authorities in particular voiced concern at the lack of expertise in their officers, and the inadequacy of fees should consultants be necessary.

Implementation

Applications were often late and quality variable. On the whole authorities conferred with operators beforehand or requested further information rather than return applications. Some feel the guidance notes are vague and the timetable unrealistic; the determination period was also felt to be too short. Some codes of practice for monitoring are also considered unworkable.

Fees

There is a general view that fees should be related to the size of the process. Many small operators are put off applying by the fee or close down. Large operators with diverse processes create a disproportionate amount of work which the fee is not adequate to cover. Also, much of the work involved is not covered by the fee -- if smaller processes are tracked down they often close, and if consultants are required the fee is insufficient to cover costs. Many considered it too early to realistically assess the adequacy or otherwise of funding.

ANALYSIS

The returns indicate that a significant number of Block One and Two processes have yet to apply for authorisation. Of those Block One applications which have been received around a quarter have already been authorised.

Two-thirds of respondents consider that staffing levels are inadequate, with one in six currently unable to cope. Forty-five per cent of authorities have created additional posts for the work, but a worrying two-thirds say they have undertaken EPA work at the expense of other environmental health duties. One in twenty has used outside consultants.

Respondents seemed on balance happier with the annual subsistence fee (two-thirds considered it adequate or more than adequate) than with the initial application fee (just over a half).

The public registers system is being little used save by competitors, consultants and other local authorities in search of examples of good practice. Some local authorities supply copies free whilst the highest charge recorded is £1 per sheet. Some take the canny approach of charging local people a nominal fee whilst charging more to outside interests.

COMMENT

The results of the survey suggest that, midway through the introduction of Part I of EPA 1990, local authorities are coping well with their new responsibilities for process authorisation.

Although the achievements reflect well upon the performance of local authorities, this is being achieved only with sacrifice. The demands of the new system have entailed a shift of resources away from other areas of environmental health work, and many authorities regret a lack of pump-priming which might have mitigated this impact. Sim-

ilarly, there is a perception that more could have been done to alert process operators to their new responsibilities.

The difficulties recorded provide retrospective justification for those requests made during the EPA start-up phase for additional pump priming resources and higher (although possibly stepped in relation to size) initial authorisation fees. Since fees have now been fixed for 1992-3, these factors are largely of historical interest, but there is still a case for reviewing a stepped annual subsistence fee in future years.

NSCA's concern for the future is that the short term reallocation of resources necessitated by the introduction of the EPA authorisation procedure does not become a permanent distortion in environmental health departments. The annual subsistence fee must fully reflect the costs of servicing and monitoring authorisations; although authorities are on balance optimistic on this point, we must reserve our position on the adequacy of the fee until practical experience provides further proof. The job of tracking down the thousands of processes which still await discovery will continue to demand resources, and must be seen to pay for itself through the application fees so recovered.

The fee system must also be fair to industry — some authorities note the negative impact on small businesses, particularly those operating more than one process. Whilst acknowledging the difficulties of devising an equitable method, we still consider that a system which relates the fees to the complexity of the process, and possibly to the ability of the process operator to pay, would meet with widespread approval.

The survey revealed a great variation in copying charges, but given the low take-up of register information it is difficult to assess this as a factor in discouraging access to environmental information.

A more concerted effort is indicated to alert the public to its rights under the new Act. NSCA intends to play its part in distributing its new leaflet *Industrial Pollution Control — Your Rights and the Law.* This will help local authorities interpret the new system to the public, and also assist industries in explaining their plans to meet local environmental responsibilities.

The survey has provided a useful snapshot of the story so far; it is our intention that a follow-up survey at the end of the Block Three application period will provide the next chapter. By this time Scotland will also be issuing authorisations and we await developments there with interest.

TRAFFIC POLLUTION STILL RISING — TIME FOR CAR SPEED LIMITERS?

The Department of Transport recently issued a consultation paper on the revision of the criteria used to determine speed limits. In its comments NSCA notes that speed limits could have an important role to play in the achievement of environmental objectives. There is a relationship between speed and environmental impacts including air pollution, noise and quality of life. However the consultation paper does little to evaluate the potential of speed limits in reducing these impacts.

1. Introduction

NSCA analysis of Department of Environment statistics[1] for the last decade shows that road transport is the only sector where emissions of all the major air pollutants are still increasing. Other major sectors such as power stations, industry and domestic, are now generally less polluting than they were ten years ago.

Pollution from Road Transport 1980-90

Pollutant	*1980 thousand tonnes*	*1990 thousand tonnes*	*% of current UK total emission*	*80-90 10-year % rise*
Black smoke	118	207	46	75
Sulphur Dioxide	42	63	2	50
Nitrogen Oxides	804	1381	51	72
Volatile Organic Compounds	864	970	41	12
Carbon Monoxide	4104	5986	90	46
Carbon Dioxide	21000	30000	19	43

Over the next few years improving vehicle emission standards should lead to a reduction in black smoke, plus the three pollutants controlled by catalytic converters — nitrogen oxides, carbon monoxide and hydrocarbons (VOCs). Although individual vehicles may be less polluting, any improvement will be offset to some extent by the predicted increase in total vehicle use.

Projections for carbon dioxide are more worrying. The UK is committed to stabilise emissions at 1990 levels by 2000, so long as other countries do the same. However on current trends emissions in the transport sector will double over the next 30 years.

Speed limits could have an important role to play in the achievement of environmental objectives. The European Commission's draft Fifth Action Programme for the

Environment[2] introduces the concept of sustainable mobility and specifies the *"promotion of more environmentally rational use of the private car, and changes in driving rules and habits, including speed limits"* as an important element in any strategy to reduce the environmental impact of the transport sector. The EC Green Paper on Transport and the Environment[3] further notes the possibility of using *"technical devices, such as speed limiters, to ensure compliance with imposed speed limits"*.

2. Environmental Impacts of Road Speeds

(a) Air Pollution

There is a clear relationship between emission of air pollutants and road speeds. Tests on motor cars by Warren Spring Laboratory[4] show that, broadly speaking, current petrol engined cars emit most carbon monoxide and hydrocarbons at speeds below 40 mph, and most oxides of nitrogen at speeds above 40 mph. Emissions of carbon dioxide are related to engine efficiency and are thus increased at both low and high speeds, with an optimum around 50-55 mph. Modelling by Earth Resources Research[5] suggests that carbon dioxide emissions from cars could be reduced by 2.4 per cent simply by enforcing the current 70 mph speed limit, whilst a strictly enforced 50 mph limit would produce a 5.8 per cent saving.

(b) Noise

As EC noise standards for vehicles become progressively tighter, a growing proportion of road traffic noise will arise from aerodynamic and tyre-surface interactions. Both are related directly to speed; in its method of calculation of road traffic noise, the Department of Transport[6] allows a correction factor of up to 10 dB(A) between a mean traffic speed of 20 km/hr and 130 km/hr. This is equivalent to a doubling of perceived noise.

(c) Quality of Life

The social effects of traffic speeds are less tangible and measurable. Roads with speeding traffic often serve to divide communities, and by creating a negative perception of safety can discourage environmentally benign transport modes; walking and cycling.

3. Effects of Adjusting Road Speed Limits

At first sight, an across-the-board reduction in road speeds would appear to offer straightforward environmental benefits. However the Warren Spring data indicates that in some situations low road speeds — typified by urban traffic congestion — can actually increase some environmental impacts. Furthermore, the introduction of catalytic converters will reduce emissions of carbon monoxide, hydrocarbons and nitrogen oxides (but not carbon dioxide) from individual cars. The forecast increases in road traffic will offset this improvement to some extent, but emissions from catalyst-equipped cars are likely to be less speed dependent. Although "cat" cars will take a decade to dominate the car fleet, they will be driving the majority of vehicle kilometres in only a few years time. Various scenarios designed to optimise the car fleet turnover should be evaluated in this respect. Even so, in the medium term speed limits could still make an impact on cat-regulated air pollutants.

A more sophisticated approach would look at the effects of each pollutant in terms of local, regional and national impacts, evaluate the potential of speed limits in reducing these impacts in the medium and long term, and then — on the basis of subsidiarity — identify which agency should be empowered to implement the measures.

(a) Carbon Dioxide

Reductions in emissions are desirable from a national perspective as part of the UK's commitment to stabilise — and hopefully start to reduce — greenhouse gas emissions. As noted above, effective enforcement of the existing national maximum speed limits, or a reduction of the speed limit towards the optimum cruising speed, could secure significant reductions in the transport sector. The introduction of speed limiters, already required for coaches and HGVs, would greatly enhance the effectiveness of speed limit enforcement. Traffic management schemes which improved traffic flow would also reduce emissions from low-speed congested traffic.

(b) Oxides of Nitrogen

Recent research[7] indicates that one third of the UK population lives in areas which exceed the EC health guidelines for nitrogen dioxide, and that the 35 per cent rise in emissions over the last five years is largely attributable to road transport. Oxides of nitrogen also contribute to the formation of photochemical oxidants, largely in the south of England, and to overall acid emissions from the UK. Reductions in the maximum speed limit could help to reduce emissions locally where a direct health impact can be demonstrated; regionally as part of a programme to reduce photochemical oxidants; or nationally as part of a commitment to reduce emissions of acid gases.

(c) Carbon Monoxide and Hydrocarbons

Hydrocarbons and other volatile organic compounds are implicated in regional photochemical oxidant formation; carbon monoxide is a local health concern. Both will be reduced in the long term by catalytic converters; medium term they could be reduced by improved traffic management which speeds traffic flow.

(d) Noise

Grants for sound insulation are available where new road schemes cause traffic noise levels to rise above 68 $dB(A)_{L10(18\ hour)}$. Grants are not, however, available where noise exceeds this level on existing roads due to a general increase in traffic. The introduction of local speed limits could provide an alternative means of reducing sound levels to an acceptable threshold.

(e) Secondary Effects

Setting and enforcing a lower maximum speed limit — some groups argue for 60 or 50 mph — would tip the balance in favour of public transport for some trips. It would also signal a change in official attitude; the beginning of the "civilising" of the motor car promised by Cecil Parkinson as Secretary of State for Transport. So too would the introduction of speed limiters; a recent opinion poll for ROSPA showed that two thirds of those asked thought that cars should be fitted with speed limiters.

4. Implications for Policy

The European Commission has advanced the debate on sustainable mobility, seeking to integrate transport *"into an overall pattern of sustainable development"*. At national level this will require the establishment of goals and the evaluation of a range of measures required to achieve those goals.

Whilst accepting that *"the main purpose of specific speed limits is to reduce as far as possible the risk of accident"*, we would have expected a clear acknowledgement from the current consultation document that speed limits are also one of the measures available to achieve environmental targets and goals at local, regional and national level.

We note the assurance that the new proposals *"would provide Local Highway Authorities with greater freedom to exercise their professional judgement as to the speed appropriate to a particular road"* in terms of benefits to the environment. However the consultation document gives no indication of how environmental benefits should be treated in the cost-benefit balance sheet approach which is advocated. New guidance on environmental policy appraisal for government departments[8] has been criticised for an over-dependence on cost-benefit analysis and we would welcome a methodology which takes into account broader social and environmental factors.

Where local authorities are concerned about traffic noise or exceedances of health guidelines for nitrogen oxides, speed limits should be one of the measures they can invoke as a control measure. Where national emissions of carbon dioxide are at issue, the effects of introducing a national maximum speed limit should also be compared in effectiveness with other policy options. Speed limits are clearly one of the weapons available in the environmental protection armoury; the framework does not yet exist to evaluate their relative effectiveness for achieving environmental goals. Once again we are drawn to the conclusion that a national Environment Agency would be ideally placed to produce such an evaluation.

5. References

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PUBLIC ACCESS TO ENVIRONMENTAL INFORMATION HELD BY PUBLIC BODIES

The EC Directive on Public Access to Environmental Information (90/313/EEC) has to be implemented by the end of 1992. Under the terms of the Directive members of the public are entitled to have access to all information about environmental pollution held by government and public authorities unless it is exempt on specific grounds such as national security and commercial secrecy. Information must be supplied within two months of a request; reasons for any refusal must be given; and there must be a right of appeal. The UK is to implement the Directive through regulations made under the *European Communities Act 1972*, and to this end issued a consultation paper early in 1992 on the content of the Regulations.

NSCA has long supported unrestricted public access to information obtained by pollution control authorities exercising statutory powers, so long as matters of genuine national security and commercial confidentiality are respected. These proposals build usefully on the register-based public access system first proposed by the Department of Environment in 1989, broadening the scope to encompass a much wider range of environmental information. However, NSCA feels that the current proposals are a little vague on exactly how wide this range will utimately be. Furthermore, it could reflect with more enthusiasm the emphasis on the improvement of environmental data which is expressed in the European Community's fifth action programme for the environment. In particular NSCA would welcome an acknowledgement of the importance of filling the current gaps in baseline data, improving the availability of existing information, and making environmental information more easily interpretable to the lay person.

NSCA believes that public access to information is an essential element in maintaining confidence in the machinery of environmental protection. However the Government must be prepared to assume a proactive stance in order to ensure public participation. Early indications from NSCA research suggest that the register systems which have been set up under the *Environmental Protection Act 1990* have, thus far, been little used. Registers which have been set up under the EPA appear to have been mainly of interest to competing firms and consultants and to businesses which know they will have to apply for authorisation in due course. The public appears to be largely unaware of the registers. Even where there is awareness, unfamiliarity with official procedure or inability to interpret the available information present further obstacles. We would recommend an explicit statement by the Government that the maintenance of public confidence requires more than simply making available environmental information and further that:

— all reasonable steps should be taken to alert the public to the existence of environmental information and their rights to inspect it; and

— that the information should be presented and where necessary interpreted in a "user-friendly" fashion to facilitate public understanding.

There will clearly be an expanding role for industry, public bodies, and the voluntary sector in this respect. The challenge will be to help the public understand how the piecemeal data associated with, for example, individual authorisations, dovetails with environmental quality statements and wider environmental management strategies and plans.

The Directive requires that *"information relating to the environment held by bodies with public responsibilities for the environment and under the control of public authorities is made available on the same terms and conditions. . ."*. The Government has interpreted this as including central and local government and other bodies with regulatory responsibilities for the environment. This would include bodies such as the National Rivers Authority, English Nature, Countryside Council for Wales and Scottish Natural Heritage. The consultation paper includes a list of the main bodies to be covered. In accepting that the list is not exhaustive, NSCA nevertheless recommends that an approved list be compiled and maintained — perhaps by the new Environment Agency — with further bodies added as appropriate.

Insofar as all central government departments are now required to account for their environmental responsibilities, they must all be considered to fall within the requirement of the Directive, as holders of information on *". . .activities. . .or measures adversely affecting. . .(the environment). . ."* or *". . .activities or measures designed to protect. . .including administrative measures and environmental management programmes. . ."*. Thus, for instance, data held by the Home Office on police prosecutions of noisy or smoky road vehicles, or by the Treasury on the effectiveness of environmental tax incentives, should be made available. We recommend that all Government Departments be listed, rather than the *"several"* referred to here.

NSCA suggests that the paper does not make a satisfactory case for the proposal that *". . .Reports on alternative engineering options/solutions in the light of environmental factors will not necessarily be disclosed. . ."*. If reports on the environment are commissioned by public bodies they should normally be made available, whether or not they form part of any ultimate policy or action, unless a case can be made for specific exemption on the grounds of, for example, national security or commercial confidentiality.

The Directive permits enforcing authorities to refuse requests for access to unfinished data and documents. It is the Government's intention that access should be available to data from which studies are compiled. However, it proposes that the right of access may only be exercised once those undertaking the study have completed it. NSCA is concerned that this approach would limit public access to a study which is considered to be incomplete by those undertaking it. Such an approach has two weaknesses: firstly a body may legitimately wish to release data which forms part of an incomplete study; secondly a body may unreasonably withhold information on the excuse that it forms part of a larger, still incomplete, study. We consider this to be an unnecessary complication; it should be sufficient for a public body to be able to justify its refusal to release information, whether part of an incomplete study or otherwise.

Given the diversity of sources and modes of environmental information we accept that the "raw" data held by public bodies cannot be presented in any coherent, uniform

format. However information relating to the existence and availability of such information can. The current proposals should be strengthened to require all bodies on the approved list to publish annually a statement of the areas where they hold unrestricted environmental information. Since we expect public bodies to be integrating environmental concerns more fully into their management systems, such information would in any case be available as part of any ongoing review process. Such statements could, with little effort, be collated centrally and published as a source document.

DRAFT PLANNING POLICY GUIDANCE ON TOURISM

In a letter to the Department of Environment on its draft planning policy guidance (PPG) on tourism, NSCA said that the main cause for worry, so far as air quality was concerned was emissions from touring motor vehicles. Realistically, however, tourism was likely to contribute only marginally to any measurable air pollution impacts, at least at a local level.

At a national level the inexorable rise in road transport is giving rise to continued concern about emissions of nitrogen oxides, hydrocarbons, carbon monoxide and carbon dioxide. Although emissions of the first three are likely to diminish with the introduction of new technology, any improvement will be offset to some extent by the predicted growth in vehicle mileage. Furthermore emissions of the greenhouse gas carbon dioxide are virtually a straight function of vehicle mileage and are set to continue on an upward trend. Insofar as tourism encourages car use, therefore, it will continue to have an impact on the environment. In view of the national obligation to stabilise and reduce emissions, any strategy likely to increase the use of cars for tourism would clearly be inappropriate.

NSCA looks to the planning system to produce a framework for reducing overall journey lengths, and thereby reduce air pollution. We acknowledge that the motor car is, in many cases, the most appropriate means of transport for reaching remote tourist destinations. However for journeys to, and within, tourist areas we would expect planners to take action where possible to encourage a shift towards those transport modes which do least damage to the environment; specifically public transport, park and ride schemes, cycling and walking. At a strategic level this will largely be achieved through adjustments to the transport infrastructure. At a local level, developments should be assessed on criteria which presume against car "access exclusivity" where alternatives exist, or where prolonged car use is considered to be an intrinsic part of the experience — safari parks, for instance.

The current draft, however, fails to draw attention to the important role of planning in reducing vehicle emissions and given the widespread recreational use of cars for tourism we would recommend that this omission be rectified.

A second surprising omission is the lack of reference to noisy activities. Many activities undertaken by tourists are intrinsically noisy, and the number of noisy country-

side sport activities appears to be on the increase; indeed, farmers are being encouraged to diversify into such activities. Examples include clay target shooting, inland power boating and water skiing, off-road motorcycling and rallying, helicopter rides over scenic areas, model aircraft and light aircraft flying. We would expect the guidance to refer to the Planning Policy Guidance note "Planning and Noise" (currently under review), to Department of Transport plans for controlling aircraft noise, and to the various codes of practice either approved by the Department of Environment or under discussion. All have implications for planners and tourism.

PROPOSALS TO PREVENT LAND BECOMING DERELICT

A Survey of Derelict Land in England in 1988 recorded 32,000 hectares of derelict land justifying reclamation compared with 34,500 hectares in 1982, a reduction of about 8 per cent. Most of the existing stock of dereliction is the result of former heavy industries or is related to old mineral workings. It has arisen because of industrial restructuring and, in the case of minerals, inadequate planning controls.

The Review of Derelict Land Policy published in September 1989 recommended a number of detailed changes to the operation of the Derelict Land Grant (DLG) programme. Some of these changes have now been implemented and are set out in DLG Advice Note 1 published in May 1991. The Review also included proposals aimed at preventing land becoming derelict and encouraging a greater contribution towards reclamation from the private sector owners of derelict land. The Government has now published a consultation paper outlining two proposals to help deal with the problem. These are the wider use of restoration conditions in planning consents for new development and secondly an extension of local authority powers to reclaim derelict land to enable them to deal more effectively with such land in private ownership. Both proposals take as a basic starting point that the "polluter should pay", i.e. those causing contamination and dereliction should pay for putting it right.

In commenting on the proposals, NSCA reiterated its support for a continuing emphasis on the need to recover derelict land and the resulting benefits for local amenity and economic activity. On the basis that prevention is better than cure, the current proposals represented a welcome opportunity to build land restitution into the planning process, and would further empower local authorities to take effective action.

NSCA supported the principle of extended use of restoration conditions in planning consents but could see no advantage in requiring the restitution of land to standards higher than those required by the likely eventual land use. The choice of the extent of restoration for a "hard end" or "soft end" use could thus be based on existing planning zones. Land zoned for continuing industrial uses would thus merit reclamation to a hard end use standard.

NSCA recommended that details of restoration conditions and restoration work

subsequently carried out should be recorded on the proposed Register of Land Which May Be Contaminated, as many derelict sites would have been host to polluting activities with potential for adverse health and other environmental effects. NSCA also suggested that planning departments should be required to liaise with environmental health departments on the use of restoration conditions.

In urban and urban fringe areas where amenity green space is at a premium it may also be appropriate to identify areas in the local plan which, if they become derelict, should preferentially be restored to soft use. This may require more than "cosmetic" treatment; in setting restoration conditions planners should take account of advice from local bodies representing recreation, heritage, landscape and wildlife interests. Restoration to a socially and ecologically appropriate soft use is not inevitably a low-cost option.

The Society also endorsed the second proposal outlined in the consultation — the principle of extending local authority powers to reclaim derelict land to a minimum standard, regardless of previous use. Any detailed comment was however more appropriately left to the local authority associations.

NSCA SCHOOLS LEAFLET COMPETITION

NSCA's schools competition to design a leaflet entitled "Ten Things You Can Do For The Environment" drew entries from all over the UK. There were two categories for entries — junior and senior school children — and schools were asked to submit entries on behalf of the whole class. In this way, it was hoped to stimulate discussion among children about what they could do for the environment. Certainly some of the entries showed a highly original — if not strictly accurate — view of actions which they thought might help protect the environment.

We now hope to use the two winning designs as the basis for two leaflets to be used by us when dealing with enquiries from schoolchildren. The winners were:

Senior Winners: Class S1 and PE, Priory School, Mounts Road, Bury St. Edmonds, Suffolk.

Junior Winners: Class 6C, St. Augustines RCPS, Leeds/Bradford Road, Bramley, Leeds.

The highly commended runners-up were:
2nd year English Class, Kelvinside Academy, Glasgow.
Form UV, St. Hilary's School, Sevenoaks.
Litter/Recycling Club, Wickersley Comprehensive School, Rotherham.
Hunterhouse College, Belfast.
Form 9DE, Range High School, Formby.
Class 4W, Michael Ayres School, Bognor Regis.
Troon Primary School, Troon.
Class 5, Corporation Road Junior School, Darlington.
Form J6, Heathfield School, Worcestershire.
Form 1RH, Glyncoed Junior Comprehensive School, Ebbw Vale.

All of these schools win a book token for £25, copies of educational material produced by NSCA, plus books kindly donated by educational publishers:

Clean Air, Dirty Air (A&C Black)
Caring for the Environment series (Simon & Schuster)
The Atlas of the Environment (Wayland)

In addition, the two national winners will each receive a splendid trophy, courtesy of Shanks & McEwan (Northern) Limited.

In her letter accompanying the winning senior entry, class teacher Ms P. Edge said: "It has given a tremendous impetus and incentive to the pollution and conservation part of our Environmental Science programme. Environmental issues frequently seem to be so enormous and so far removed from the individual that having to think about 'Ten things you can do for the Environment' has really brought it down to a personal level and at the same time the competition has encouraged us to work as a group to think about how we might influence other people".

NOISE FROM STANDBY GENERATORS

The last meeting of the NSCA National Noise Committee noted an increase in noise nuisance and pollution from the use of standby generators. Although the intermittent use of such generators is accepted, and their use in construction sites is already subject to control, the committee noted that in some situations generator sets are now being used on a semi-permanent basis to provide electricity. NSCA would be interested to hear from any members with experience of this problem.

INFORMATION ENQUIRIES

Enquiries to the NSCA Information Department increased for the fifth year in succession. Staff dealt with 6,300 postal enquiries in 1991 (5,500 in 1990). Of these 3,500 were from children and 2,800 from adults. In addition staff deal with upwards of 60 telephone enquiries each week from a variety of sources.

REPORTS

ECOLOGICAL EFFECTS
THE CRITICAL LOADS APPROACH

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This paper was presented at the NSCA's 1992 Spring Workshop.

Abstract

Increased scientific awareness of the environmental impacts of acidifying pollutants has led governments to seek more effective means of assessing the magnitude of effects and for planning emission controls. The Critical Loads approach, which identifies the threshold of damage for a biological receptor (eg species, communities, ecosystems) and compares this with the incident pollutant load, offers a solution which has proved acceptable internationally. Within the framework of the United Nations Economic Commission for Europe (UN-ECE), methods for calculating and mapping Critical Loads have been developed based on the methods discussed by scientists at international workshops. National data are being compiled to generate European maps of Critical Loads as part of the planned revision of the UN-ECE sulphur and nitrogen protocols. The methods chosen for calculating Critical Loads will depend on the data available nationally and perceptions of sensitive receptors. A range of different models are available including empirical approaches, simple equilibrium models and more complex dynamic models which have more extensive data requirements. However, dynamic models can provide information on rates of acidification and on rates of recovery following pollutant deposition reductions. For the UK, a national map of Critical Loads for acidity has been generated for soils using available soils information. A map of freshwaters is being compiled using survey data. These maps have been compared with national deposition data to derive maps to show areas where the Critical Load is currently exceeded. Using modelled deposition for the year 2005, a Target Loads map has been drawn indicating areas where the Critical Load will still be exceeded and damage may occur. While scientific studies continue on developing methods and on deriving values of Critical Loads, the first maps are providing the opportunity for linking the protection of the environment with future pollutant abatement strategies.

1. Introduction

There has been increased awareness and concern over the effects on the environment of

manmade acidic emissions. These effects can take place at great distance from emission sources and may cross international boundaries. However, while attempts have been made to reduce emissions through international agreement (UN-ECE, 1989), the legislation has been aimed at a phased reduction of large combustion sources without setting specific objectives based on environmental benefits. Hence, the present CEC sulphur protocol aims for a 60 per cent reduction in sulphur dioxide (SO_2) emissions from these sources by the year 2005.

While the origin of the concept of Critical Loads is usually attributed to Canada (UN-ECE, 1990), it was at the Stockholm Conference in 1982 that "threshold" concentrations for adverse effects were first defined (Aniansson, 1987). This has now become known as the Critical Loads approach.

In recent years the approach has been further developed, first in the Nordic countries and then within the framework of the UN-ECE Convention on Long Range Transboundary Air Pollution. In this paper we discuss what is meant by the Critical Loads approach and how the technique is now being applied to the abatement of emissions in Europe. We also present examples of UK maps which have been developed to aid national policies and as part of the UN-ECE activities towards revision of the sulphur protocol.

2. Definitions of Critical Loads and Critical Load Exceedance

The concept of a Critical Load is based upon a dose-response relationship where the threshold of harmful response is triggered by a certain load of pollutant known as the Critical Load (Figure 1). A similar idea has been developed for direct harmful effects of pollutant gases where the threshold concentration is known as the Critical Level.

If values are known for the Critical Load of an ecosystem (or species or community) and for the incident pollutant deposition (be it measured or modelled), it is possible to calculate if — and by how much — the Critical Load is exceeded. The estimate of excess pollutant has been termed the exceedance of the Critical Load and this may give some indication of the level of damage to be expected.

While the above concepts are simple and easy to understand in principle, in practice they are not always so easy to apply without careful thought and consideration of the pollutant receptor and the threshold effects of pollutants which are harmful. An early definition (Nilsson, 1986) defines a Critical Load as "the highest load that will not cause chemical changes leading to long-term harmful effects on the most sensitive ecological system". This definition was aimed at addressing effects on the acidification of forest soils, groundwaters and surface waters. The author considered that in these cases the acid input should not exceed the alkalinity (resulting from the net weathering rate) of the system. This definition was the starting point for the first workshop in 1986 to discuss Critical Loads for sulphur and nitrogen. At this workshop, groups of scientists discussed ways of estimating Critical Loads for each of the three receptors above.

While the general definition was acceptable, the specialist groups decided to redraft the definition to make it more specific to their own area of interest. So, for freshwaters the Critical Load was defined as "the highest load that will not lead in the long

term (within 50 years) to harmful effects on biological systems, such as decline or disappearance of natural fish populations". In contrast, the soils group defined the Critical Load for acidic deposition onto forest soils as follows: "the soils should be protected from the long-term change, due to anthropogenic impact, which cannot be compensated by natural processes. These chemical changes include decrease of pH as well as the mobilisation of potentially toxic cations such as aluminium (Al^{3+}) and heavy metals. Such mobilisation requires the presence of mobile strong acid anions such as sulphate, nitrate and chloride". This adaptation of the basic definition has been a feature of most discussions on Critical Loads (and is discussed further by Bull, 1991). Nevertheless the basic concept still holds, the Critical Load is identified at the threshold of change where damage occurs, and it is one of the tasks of the scientist to identify that threshold for particular species, communities or ecosystems. The Critical Loads approach thus serves to focus scientific attention upon those important parts of the environment which are susceptible to damage.

A further important aspect of Critical Loads discussions is an appreciation of the limits of current scientific understanding. Thus, at the second Critical Loads workshop which was held in Skokloster, Sweden (Nilsson & Grennfelt, 1988) the adopted definition was "a quantitative estimate of an exposure to one or more pollutants below which significantly harmful effects on specified sensitive elements of the environment do not occur according to present knowledge". Revision of Critical Loads, in the light of improved scientific knowledge, has become an important part of the concept (Figure 2).

3. National and International Activities

The Critical Loads concept has been adopted by the UN-ECE as a useful approach for the revision of the sulphur protocol in 1993 and the nitrogen protocol in 1995. For this exercise estimates of Critical Loads and exceedances are required for individual countries and for Europe as a whole. In addition, a method is required for applying the Critical Loads approach to policies and protocols on emission abatement.

3.1 Maps of Critical Loads and Critical Loads Exceedances

In order to compare the spatial patterns of pollution with sensitive parts of the environment, maps of Critical Loads are being drawn at both the national and international level. The methods used for estimating values of Critical Loads are described below. Mapping procedures have been discussed and agreed within the UN-ECE and national data have been forwarded by a number of European countries, including the UK, to a Co-ordination Centre for Effects in The Netherlands. This Centre is liaising with delegated national Focal Centres (for the UK at ITE, Monks Wood) to generate European maps of Critical Loads which can be used as input for integrated assessment models for determining abatement strategies at a European scale. The Co-ordination Centre is also generating a low resolution European map of Critical Loads to fill the gaps where individual countries can offer no data.

The European maps of Critical Loads are based on the EMEP grid. This 150 × 150 kilometre grid system has been used by the UN-ECE European Monitoring and Evalu-

ation Programme (EMEP) as the basis for collating deposition data and for modelling deposition from national emission inventories. The integrated assessment models rely to a large extent on the EMEP models and inventories so the use of the EMEP grid is obligatory. Critical Loads exceedance maps can be generated for Europe using interpolated pollutant measurements or using the modelled deposition fields for present and future emission scenarios.

Developments in computerised Geographic Information Systems mean that national maps can now be drawn at much greater resolution and can make use of more detailed information on pollutant deposition. Again the pollutant data may be based on measurements or modelled from emission scenarios — the resulting deposition fields can then be used to derive Critical Loads exceedance maps. Maps for the UK are described below.

3.2 Target Loads

The UK government has accepted that the approach is the best way to establish emission abatement strategies for the UK as well as for Europe. For both these purposes the Critical Loads values for sensitive areas will help define *Target Loads* for areas of the UK.

Target Loads have been defined by Henriksen and Brakke (1988) as the permitted pollutant load "determined by political agreement". They allow governments to take account of factors other than the environment such as social pressures or economic constraints. Target Loads may be lower or higher than the Critical Load for an area, the former to provide a "safety margin" the latter to allow some damage if the Critical Load is unattainable (Figure 1). Within the UN-ECE it is recommended that the Target Load should be related to the Critical Load in some way so that "damage" may be assessed.

In the UK government's White Paper, *This Common Inheritance* (HMSO, 1990) the relationship between Critical and Target Loads and the control of pollutant emission is described in terms of a flow diagram (Figure 2). This shows the fixing of Target Load values as an iterative procedure where effects and abatement are continually assessed and revised. The Critical Loads estimates for different parts of the environment are also subject to scientific re-evaluation giving an additional iteration at the scientific level which may affect the political decisions determining the Target Loads.

4. The Calculation of Critical Loads

Discussions of methods to estimate values for Critical Loads have taken place at national and international levels. The latter within the framwork of the UN-ECE. Methodologies are described in a manual drawn up by the UN-ECE Task Force on mapping while the UK approach is outlined by Bull et al (1991). At present the two major receptors which have been considered on a European scale, and which have been studied in the UK, are soils and freshwaters. For both there are a variety of methods (models) available. The choice of receptor and method is to a large extent dependent upon national priorities but also upon the availability of the necessary data to do the calculations. The different approaches which can be used for soils and freshwaters are described below.

4.1 Soils

At a simple level the Critical Loads for a soil type can be estimated from its mineralogy since this is related to its weathering rate. A workshop in Skokloster (Nilsson & Grennfelt, 1988) compiled a list of mineral soil types and assigned particular Critical Loads values to these. A number of modifiers including soil texture and land use were also suggested. While this is a very simple and semi-quantitative approach it has been adopted by several countries in Europe, including the UK, who have extensive databases at fairly high spatial resolution for soils, ie national soil maps. Within the UN-ECE this is known as a "level 0" approach.

Critical Loads can be calculated using simple equilibrium models. This has been termed the "level 1" approach. The models aim to calculate the maximum input of acidic deposition that will balance the release of base cations from mineral weathering (BCW). Vegetation uptake of nitrogen (NU) and base cations (BCU) are taken into account, together with the permitted alkalinity flux out of the system (AF). Thus:

$$\text{Critical Load} = \text{BCW} + \text{NU} - \text{BCU} - \text{AF}$$

This equation represents the simplest model. More complex models which include more than one soil layer and estimates of weathering parameters and soil processes for each layer have been developed in Sweden (Sverdrup et al, 1990) and The Netherlands (de Vries, 1988). In the UK, the Swedish model, PROFILE, and the simple equilibrium approach have been used for some areas where the necessary data were available. The values calculated from these models gave numbers which were very similar to the "level 0" estimates giving us more confidence in our national estimates.

More advanced models, which demand even more data on soil parameters and processes consider the dynamic processes and changes of soil chemistry with time. These models (the "level 2" approach) provide the means of studying the damage and recovery processes and the time scale over which such processes may occur.

4.2 Freshwaters

"Level 1" and "level 2" models are also available for calculating Critical Loads for freshwaters, and both have been used in the UK. Two simple equilibrium models have been used, the model developed in Norway (Henriksen & Brakke, 1988) which has been recommended by the UN-ECE, and a "diatom model" which has been developed by University College London (Battarbee, pers comm). The Henriksen approach uses an empirical equation which relates lake chemistry to the acidification process and relies upon estimating current and pre-acidification base cation levels. The diatom approach uses a simple relationship between sulphur deposition and the base cation concentration in the water. This has been shown to be related to the diatom populations which change as acidification occurs (Battarbee, 1989).

The dynamic model, MAGIC (Model of Acidification of Groundwater In Catchments) has also been applied successfully to a number of UK catchments where sufficient data exists (Jenkins, pers comm).

5. UK Maps of Critical Loads for Soils and Freshwaters and Areas Where They Are Exceeded

The national map of Critical Loads for the UK (Figure 3) has been drawn using the national soil databases for the 1:250 000 soils maps of England & Wales and of Scotland. For each one km square of the national grid, the dominant soil type has been allocated to one of five Critical Loads classes taking into account factors such as mineralogy, texture and land use. The national map is presented using a 10 km grid. For this the dominant soil type again is used to classify each 10 km square. This map is more easily compared with the pollutant deposition data which is usually calculated for 20 km grid squares. The resulting exceedance map, which allows for both wet and dry inputs of sulphur and nitrogen and any neutralising input of base cations, is shown in Figure 4. It is evident that the more sensitive areas of the country have very low Critical Loads values which are often significantly exceeded by the current deposition loads of sulphur and nitrogen.

For freshwaters, UK maps are being derived using the Henriksen and diatom models following a national survey of freshwaters. In this survey, the water body in the most sensitive area of each 10 km square is being sampled and the water chemistry determined. The most sensitive part of the square is selected using information on the geology, soil, altitude and land use in the area. The survey of Scotland is already complete (Figure 5), and that for England and Wales will be completed in 1992.

Comparison of the freshwaters and soils maps shows some differences in the values of Critical Loads displayed. This is not surprising since the soils map is based upon soil chemistry in the upper 50 cm of soil whereas the freshwaters calculation uses water chemistry which has components derived from soil and rock layers at lower depths.

6. Application of Critical Loads and Target Loads

The concept of Target Loads has been explained above. For the UK, a national Target Loads map has been derived (Figure 6) (Department of the Environment, 1991) using a 20 km version of the Soils Critical Loads map and an estimate of a deposition pattern for the year 2005, which takes into account future planned emission reductions. In this map, the areas where the Critical Load will still be exceeded are shown as "not protected". These are the "priority" areas which will be the subject of more detailed investigations in the future. Within these 20 km squares, the one km database of Critical Loads will help indicate particular areas of sensitivity. Information on these will provide estimates of risk and damage to the environment and offer the possibility of targetting future emission abatements to protect specific important sensitive receptors.

The Critical Loads approach has been the subject of much scientific debate in recent years. The underpinning science is still under development but the approach allows for future revisions in the light of improved scientific understanding. Even now, the output from models and the resulting first maps have provided the first opportunity to link the protection of the environment with current and future abatement strategies.

Models and expert systems are being developed which will allow rapid analysis of the effects of changes in pollutant source strength on the regional or national areas of

exceedance. This technique will soon become a standard procedure in environmental impact assessment for new developments.

Acknowledgements

Dr. Bull and Miss Hall acknowledge the support of the Department of the Environment for this work (PECD/7/10/90). However, the views expressed in the paper are entirely those of the authors.

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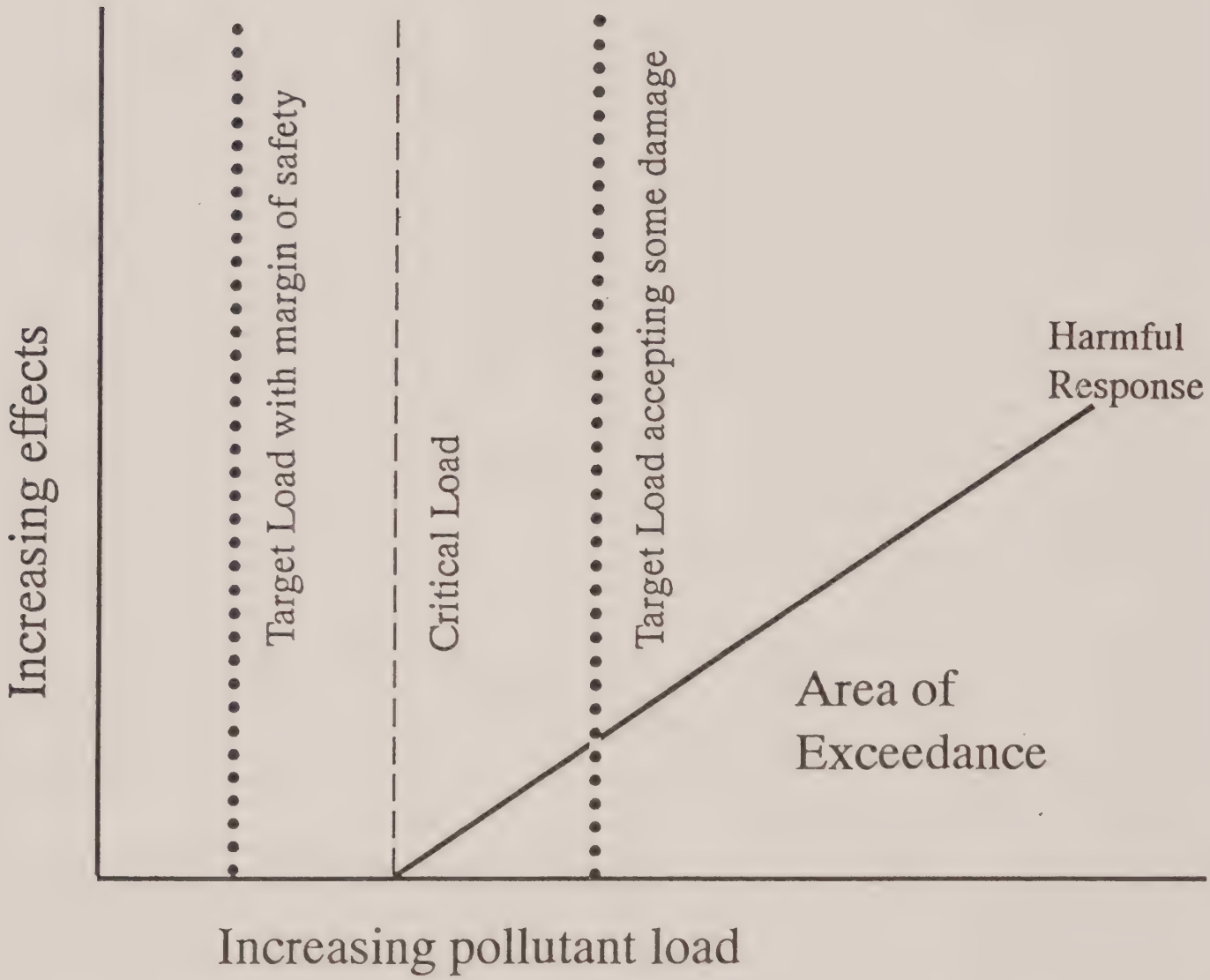

Figure 1. Dose response plot showing the "harmful response" threshold, the Critical Load, and Target Loads which include a safety margin or accept a degree of damage.

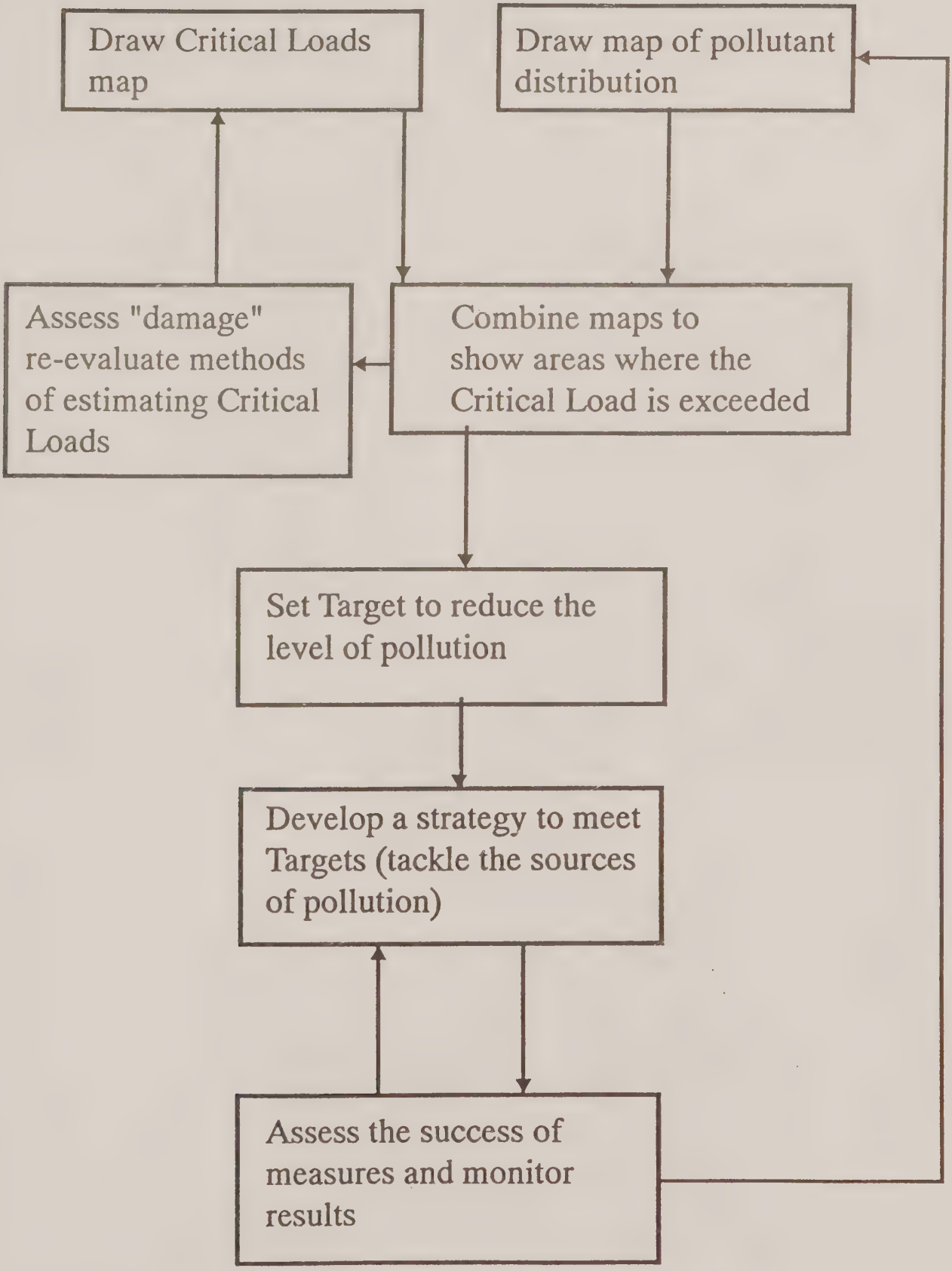

Figure 2. Flow diagram showing iterative re-assessment of Critical Loads and Targets (based on figure in HMSO, 1990).

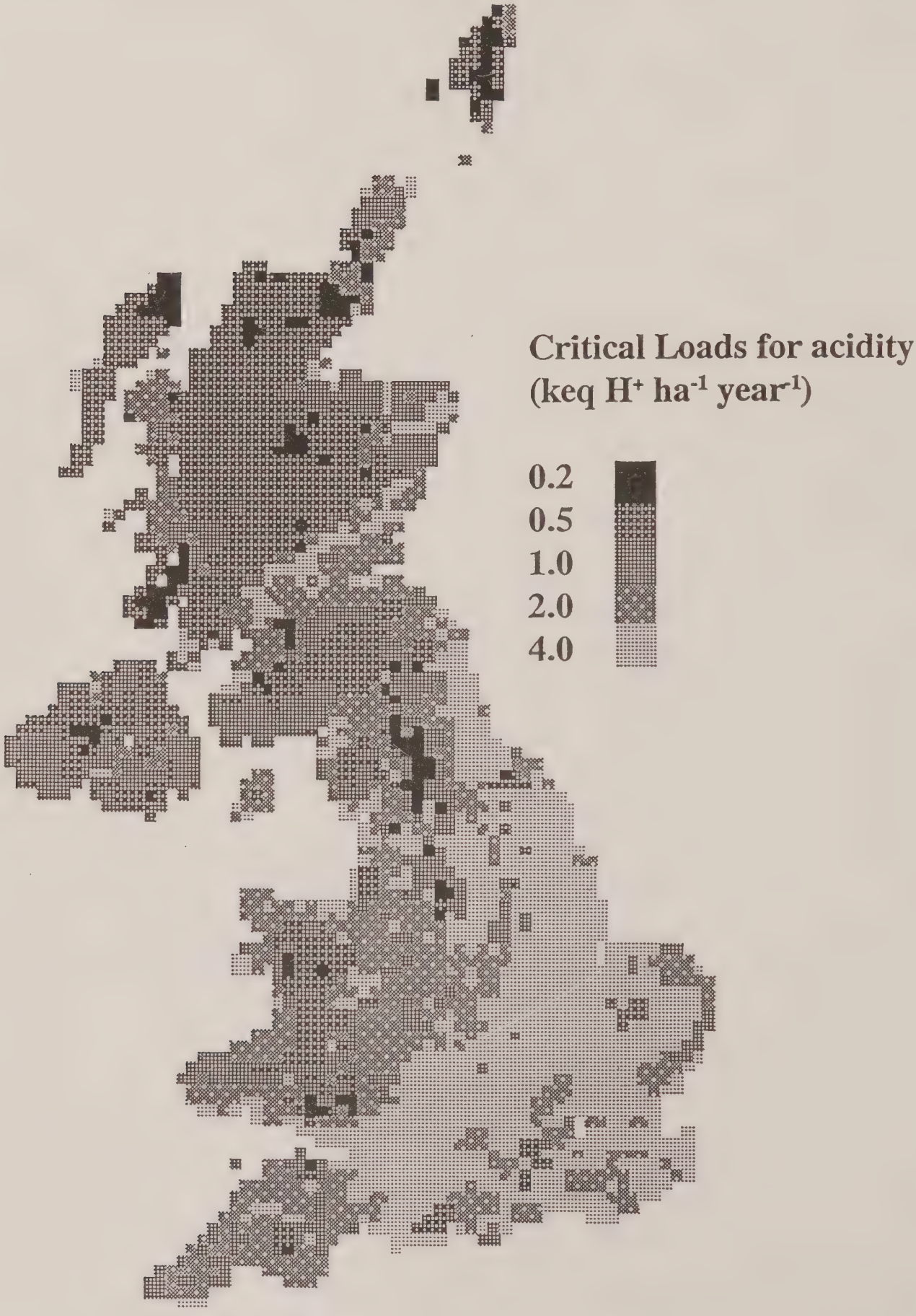

Figure 3. Provisional map of Critical Loads for acidity for soils.

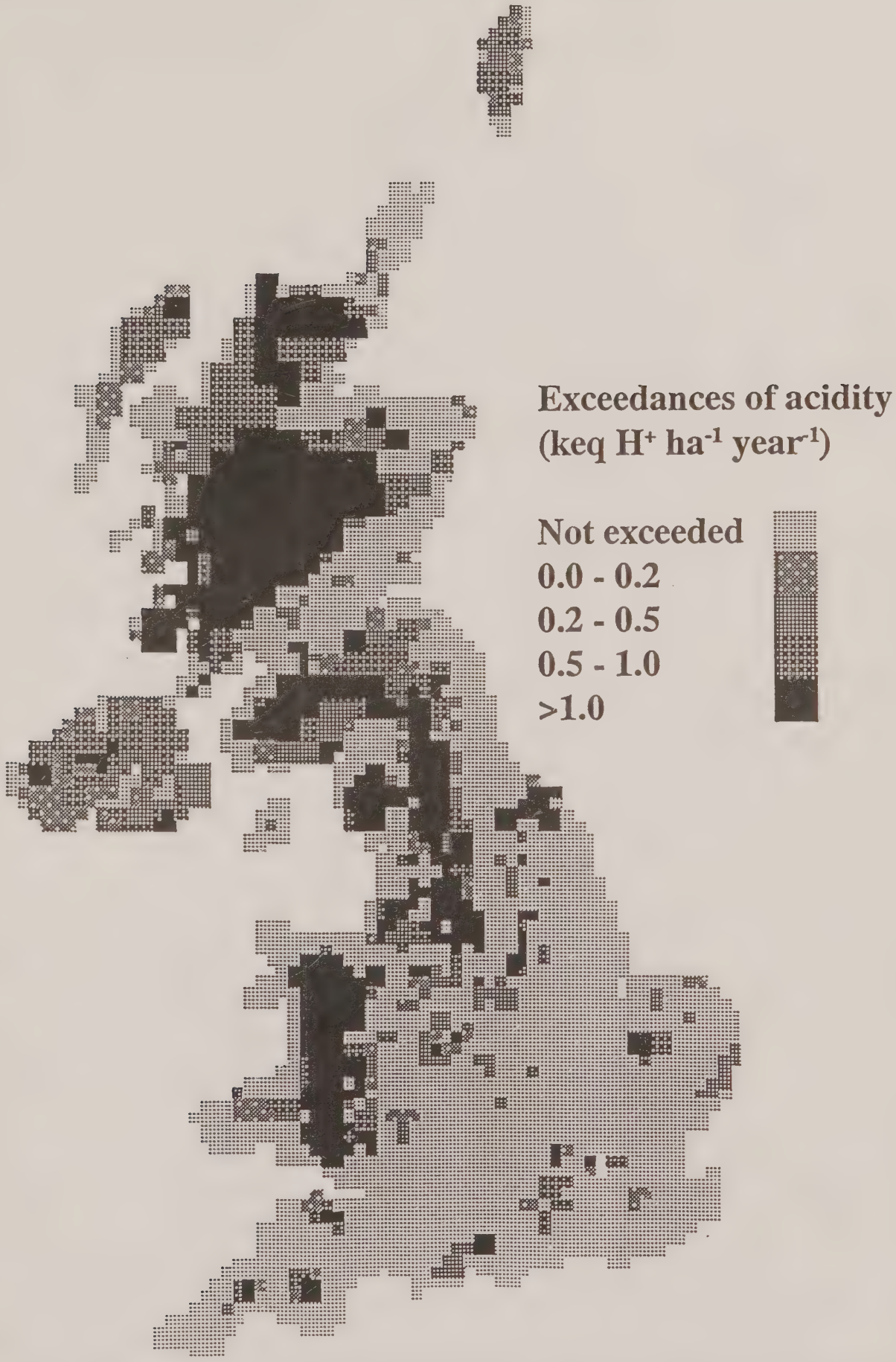

Figure 4. Provisional map showing areas where Critical Loads for acidity are exceeded for soils.

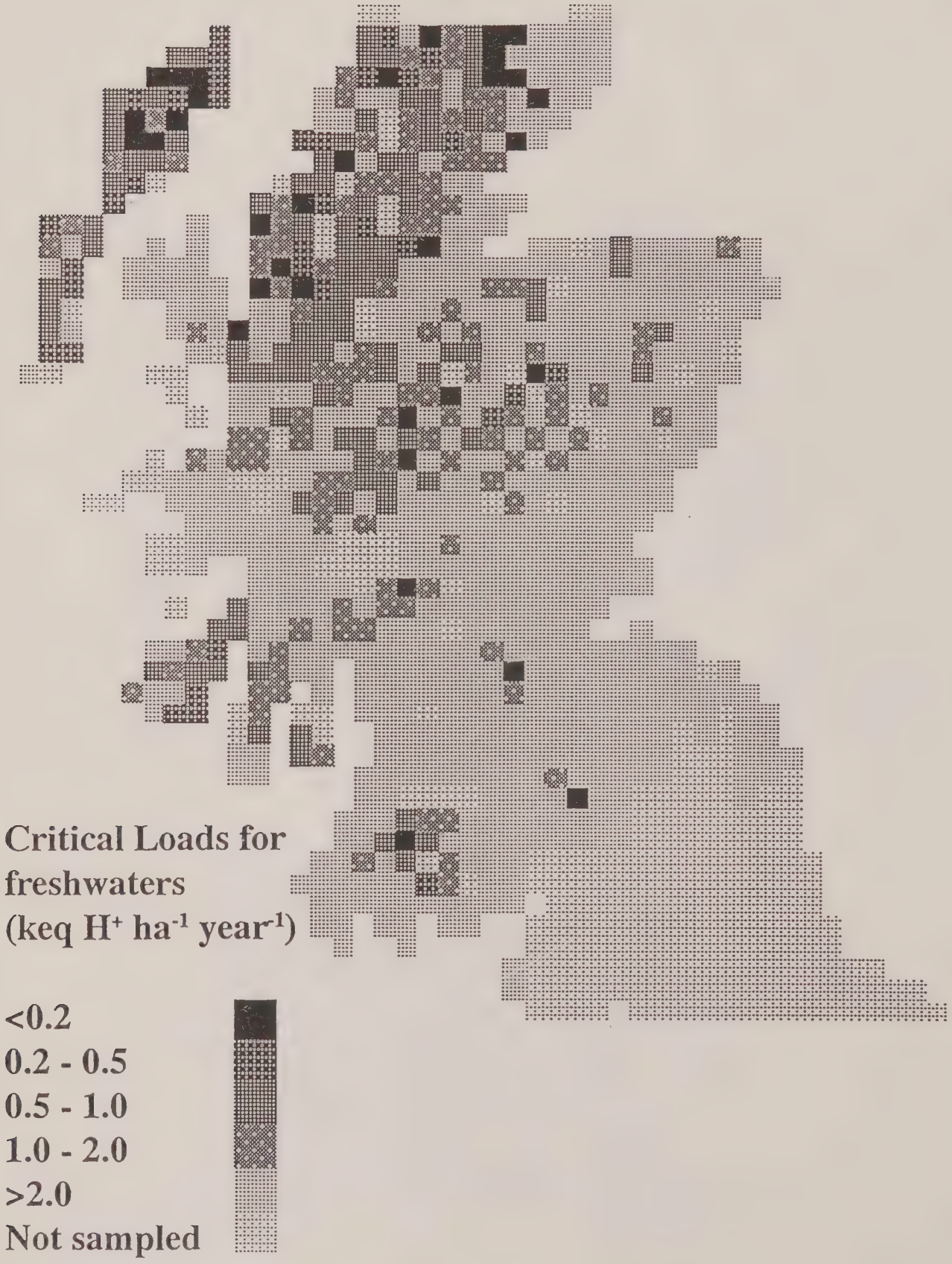

Figure 5. Provisional map of Critical Loads for freshwaters of Scotland.

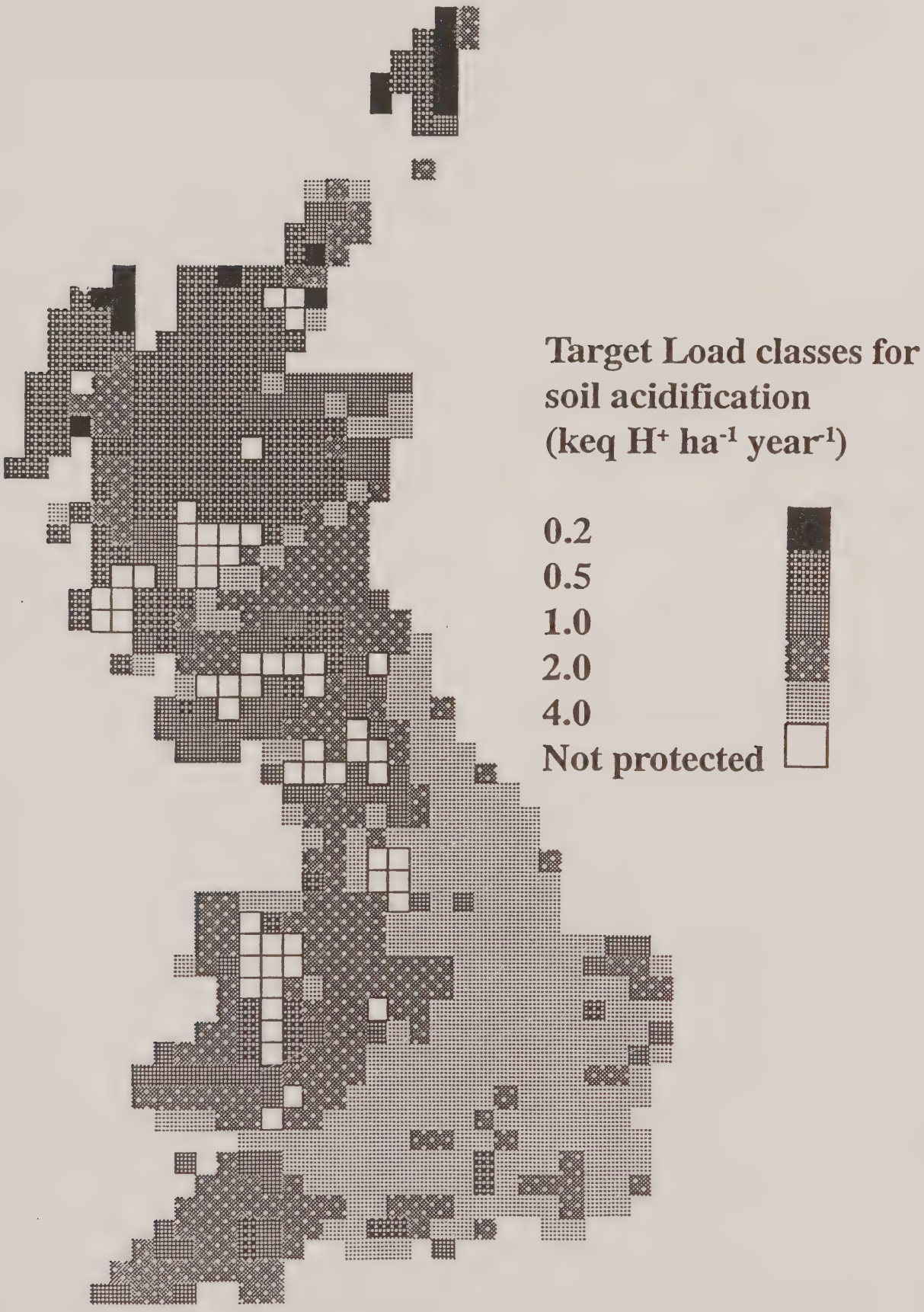

Figure 6. Provisional map of the Target Loads for the acidification of soils for the year 2005.

THE DEVELOPMENT OF BS 7750 — THE BRITISH STANDARD FOR ENVIRONMENTAL MANAGEMENT SYSTEMS

Chris Sheldon
British Standards Institution

Establishing and maintaining good environmental management is becoming increasingly important for all types of organisations. The British Standards Institution (BSI) has just published a new standard, BS 7750, *Environmental Management Systems.* It is designed to enable all sizes and types of organisations to initiate, develop and run policies to improve their environmental performance.

BSI has a long history of providing technical standards and related services to industry, and is perhaps best known for the product certification mark, the Kitemark. A Royal Charter body, independent of both industry and government, BSI has been responding to the needs of British industry and the British consumer since the beginning of the century. Much of this is well known, but what may prove more surprising is that BSI has been in the forefront of environmental standards for nearly 40 years.

Combine this substantial track record with BSI's continued success in the field of quality and quality management, its European and international links and its continued role as a technical forum where issues can be debated and consensus established by industrial representatives, independent experts and consumers, and there can be very few who would dispute the Institution's current important role in environmental developments.

As part of an environmental initiative, designed to aid industry in coping with a relatively new aspect of industrial life where there are few established work practices and processes, BSI has published a new standard, BS 7750, *Environmental Management Systems.* This document provides industry with a generic model that will help individual organisations to establish, develop and maintain their own purpose built environmental management system.

Without some background information, it may not be easy to see how such a standard could help organisations improve their environmental performance. The key is the concept of 'environmental auditing', originally used in the United States but now increasingly found in Europe.

As the concept has changed and broadened, an element of confusion has crept into the use of the term 'environment audit', though the International Chamber of Commerce (ICC) have defined an environmental audit as:

> "A management tool comprising a systematic, documented, periodic and objective evaluation of how well environmental organisation management and equipment are performing with the aim of helping to safeguard the environment by (i) facilitating management control of environmental practices; (ii) assessing compliance with company policies, which would include meeting regulatory requirements".

Confusion is sometimes caused by the fact that the term implies a regular

examination and verification of processes that are already established and in place, whereas many companies are carrying out the examination for the first time, some with little knowledge of the systems they are supposed to be 'auditing'. Such companies are in reality carrying out a positional 'review' rather than an audit.

The result of such a review may well emphasise that the company's processes lack structure and coherence in some, if not all, areas. One way to achieve greater pro-active management of these processes is a systematic and integrated managerial approach, specified in BS 7750. Once such a management system is in place, it follows that any subsequent audits will have the maximum beneficial effect.

As previously mentioned, BSI has had extensive experience of standardising management systems, having produced BS 5750, *Quality Systems* in 1979 and played a major role in its updating and eventual adoption as an International Standard, (the ISO 9000 series in 1987). Now adopted by the European Committee for Standardisation (CEN) as the EN 29 000 series, quality management system standards have obvious parallels with the requirements for environmental management.

The similarity of the number of the new standard with this established document is no accident. BS 7750 uses a quality systems approach to the problems of defining an integrated environmental management system and the technical committee felt that signalling the standard's parentage may help many organisations. There is even information included in the standard that will help to link the appropriate clauses of BS 7750 with BS 5750.

On the other hand, companies who are not currently using BS 5750 would still be able to use the new standard as, care has been taken to ensure that it is a 'stand alone' document. There are also some important additional requirements in the new document that mean it could not be considered simply an extra part of BS 5750.

Many organisations will be aware of developments in European legislation, and again, the standard can help in this area. Great care has been taken to ensure that BS 7750 is compatible with the 'environmental protection system' requirements of the proposed EC regulation on 'Eco-auditing'. So mindful of the importance of this compatibility is the technical committee that wrote the standard, that a review of BS 7750 is planned for the first half of 1993, enabling them to focus on any possible changes in the Regulation following its final ratification by the European Council and Parliament.

In addition, during the next 12 months, a special pilot programme which started in April will assess the effects of the standard in use and will run through until April 1993. Involving over 40 organisations who have expressed an interest in helping BSI with this next stage of development, the information and experience gained from the programme will be fed back into the review of the standard.

As with previous standards on management systems, BS 7750 is applicable to all types of organisations, whether manufacturing or service providing, no matter what their size in terms of workforce or turnover.

One of the most important aspects of the standard is that while it provides a generic model, it does not attempt to outline expected levels of performance in environmental

terms. It is intended to be used as a management tool not a regulatory device, enabling management teams to devise their own policy and then provide the necessary support and information systems that are required. Assurance based on compliance with the standard is thus centred on the ability of the management to meet its own stated objectives, not on the actual level of performance attained.

In order to aid understanding of the broad principles of the standard, a special diagram has been included that outlines the basic steps leading to the development of an environmental management system (see Figure 1). From this it is relatively easy to understand how an auditing system fits in under the umbrella of the management system. Information concerning the link between the standard and the proposed EC 'Eco-audit' Regulation is also provided in BS 7750.

The challenge for many companies is that a new aspect of business life, the environment, is being entered onto the balance sheet for the first time. Whether or not they consider it appropriate to enter the European Eco-audit scheme when it appears, using the new standard will certainly give a company (and its other clients and audiences) confidence in the knowledge that they are tackling environmental concerns in a systematic and integrated way. It is a standard for all management who want to be sure they are achieving the best they can, environmentally.

Copies of BS 7750 are available from BSI Sales at £20 for subscribing members of BSI (£40 for non-members). Those interested can apply by post, telex or fax, directing their order to BSI Sales, Linford Wood, Milton Keynes MK14 6LE. Orderfax (for orders *only*): 0908 322484. Ordertelex (for orders *only*): 825777 BSIMK G. Alternatively, orders can be placed by telephone direct by phoning BSI Information Services on 0908 221166.

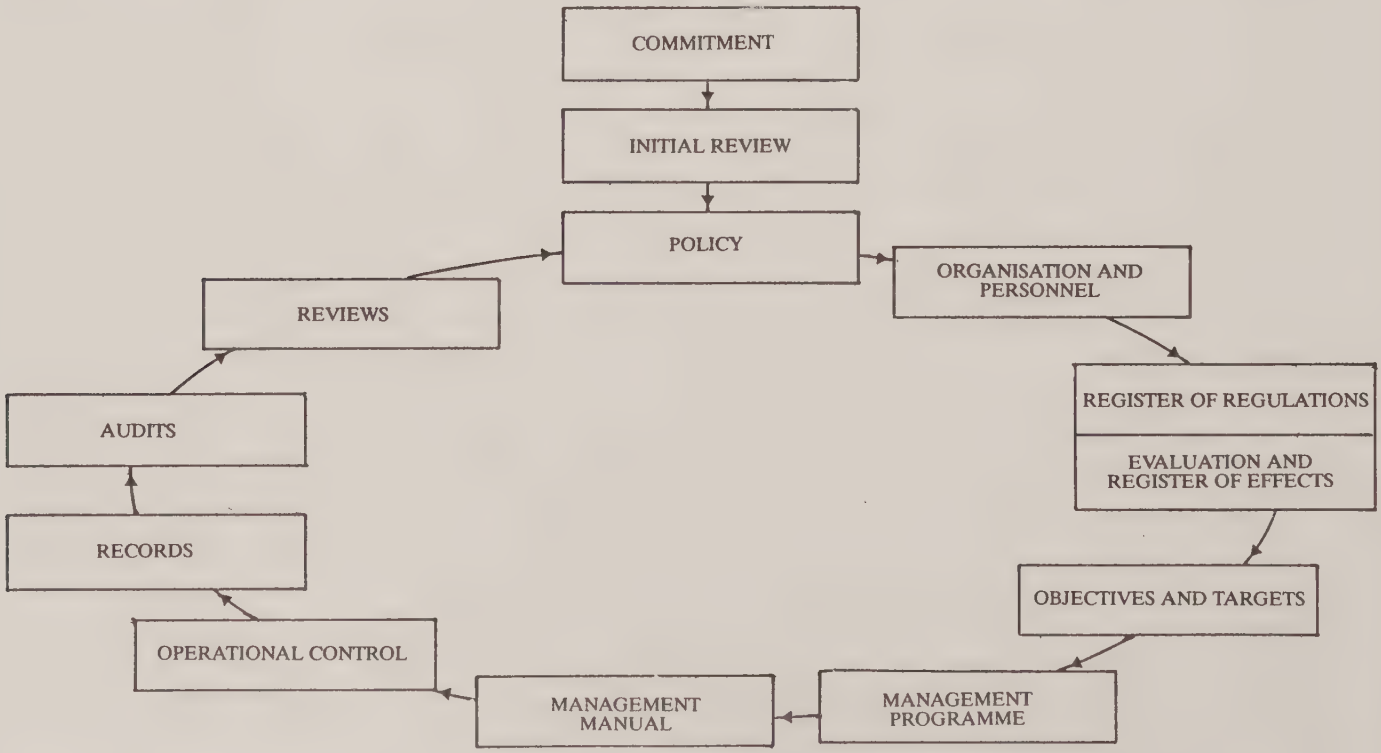

Figure 1. Schematic diagram of the stages in the implementation of an environmental management system.

UPDATE

COMMUNITY ACTION PROGRAMME

The European Commission has published its proposals for a Fifth Action Programme on the environment — COM(92) 23 final, *Towards Sustainability*. The programme, which is to run from 1993-2000, with a review in late 1995, has to be approved by both the European Parliament and the Council of Ministers.

The programme stresses the need for all sectors of the community — governments, industry and citizens — to become involved and to take responsibility for their environment. It says that environmental policies should be integrated into all areas of Community policy if the goal of sustainability is to be achieved. Sustainability in this context is defined as reflecting "a policy and strategy for continued economic and social development without detriment to the environment and the natural resources on the quality of which continued human activity and further development depend".

The programme confirms that the principle of subsidiarity, as defined in the Maastricht Treaty on European Union should apply to environmental policy. This refers "to the process of creating an ever closer union among the peoples of Europe in which decisions are taken as closely as possible to the citizen". Chapter 8 of the Fifth Action Programme says that "the Community will take action, in accordance with the principle of subsidiarity, only if and insofar as the objectives of the proposed action cannot be sufficiently achieved by the Member States and can therefore, by reason of the scale or effects of proposed action, be better achieved by the Community". In many areas, however, objectives will best be achieved through "shared responsibility" using a mix of "actors and instruments at the appropriate levels".

The programme targets five areas requiring major effort because of the stresses each places on the environment; these are industry, agriculture, energy, transport and tourism. The Commission suggests that these are all areas at which action for improvement can most efficiently and appropriately be taken at Community level. Within each of these target areas the programme identifies a number of objectives aimed at achieving sustainable development while benefitting the sector concerned. Some of the objectives will be achieved through the specific actions proposed on environmental issues — see below.

The programme identifies a number of environmental issues which because of their transboundary or global nature should also be mainly dealt with at Community level. Again objectives and targets are set and a programme to be reviewed and developed is proposed. These issues include:

- *Climate change*: Target is to stabilise carbon dioxide emissions at 1990 levels by 2000. Action to achieve this includes energy conservation and efficiency measures; fuel sub-

stitution towards less and no carbon dioxide emitting sources.

- *Acidification*: Target is to stabilise or reduce acidifying gases to ensure no exceedances of critical loads and levels. New actions include revision of municipal waste incineration standards; inventory of ammonia emissions and standards for new farm buildings; product standards for coal, fuel oils and residuals.
- *Air quality*: Targets include implementation and enforcement of current legislation and to make WHO air quality guidelines mandatory standards. Action includes amendment of current air quality legislation; finalisation of ozone Directive; identification of potential/ existing problems for a range of other pollutants.
- *The urban environment (noise)*: Target is to reduce night-time noise exposure levels with view to ensuring those exposed to 55-65 Leq dB(A) suffer no increase, and those currently exposed to less than 55 dB(A) also suffer no increase. Action includes noise abatement programmes; standardisation of noise measurement and rating; Directives to further reduce noise emissions from transportation; measures related to infrastructure and planning (e.g. better zoning around airports).
- *Waste management*: Target with regard to both municipal and hazardous waste is the prevention of waste; maximise recycling and reuse and safe disposal of any that cannot be recycled or reused. Action includes finalisation of landfill, packaging and hazardous waste incineration Directives; standards for dioxin emissions from municipal waste incinerators; liability system; collection of reliable data on EC waste and development of cleaner technologies.

Other environmental issues singled out for specific action are the protection of nature and biodiversity, management of water resources and coastal zones.

BASEL CONVENTION

The 1989 Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal came into force on 5 May 1992 following ratification by the required number of countries. The Convention was prepared under the auspices of the UN Environment Programme.

The Convention takes as a basic principle the need to reduce both the generation of hazardous wastes and their transboundary movement to a minimum. It says that all states have the right to ban the import of hazardous wastes and there are extensive pre-notification requirements for all trans-frontier movements of household and industrial wastes. The exporting state has a duty to arrange for the return of any wastes failing to go to an appropriate treatment or disposal plant. Hazardous wastes which are to be exported must be packaged, labelled and transported in accordance with recognised international standards.

GLOBAL WARMING TREATY

More than 140 countries have agreed a treaty aimed at preventing climate change through limiting emissions of greenhouse gases. However, to secure the United States' agreement to the

treaty, which was due to be signed at the Earth Summit in Rio in June, it has been weakened by the omission of any binding targets to cut emissions of the main greenhouse gases, and in particular carbon dioxide to 1990 levels by 2000. Instead the treaty encourages signatories to introduce policies aimed at the stabilisation of greenhouse gases at this level.

Following signing, the treaty — officially called *The Framework Convention on the Atmosphere* — will require ratification by 50 countries before coming into force. Within six months of ratification, which is likely to take several years, developed countries are required to draw up a programme for reducing emissions to 1990 levels.

In a separate initiative, Britain has agreed to reduce its emissions of carbon dioxide to 1990 levels by 2000 (instead of 2005), in line with other members of the European Community.

CARBON TAX

The European Commission has published proposals for a tax on carbon fuels of $3 per barrel of oil equivalent in 1993 rising by $1 per year to a maximum of $10 by 2000 to be based on both the carbon and energy content of fuels. It would therefore encourage switching to natural gas and nuclear at the expense of coal and oil. The main objectives of the proposal are to improve energy efficiency and to cut emissions of carbon dioxide, the major greenhouse gas.

However, in proposing the tax, the Commission has had to drop other plans for energy saving measures on cars, buildings and appliances — measures which critics say would reduce carbon dioxide emissions by more than the proposed tax.

Environmentalists are also critical of the fact that introduction of the tax, which has to be agreed by Member States, is conditional upon major trading nations, such as the USA and Japan implementing similar measures.

In a report* published in May, the House of Lords European Communities Committee expressed reservations about the proposed tax on two counts.

The first is that "it is a unilateral response to a global problem": the Community is responsible for only about 13 per cent of worldwide emissions. The Committee believe the tax would undermine the competitiveness of Community industry and would disrupt further the already beleaguered coal industry. The Community would become increasingly dependent on remote sources of natural gas from Siberia, Central Asia and North Africa. The Committee believe this "would be imprudent during a period of such political and economic instability in these regions". The second major reservation is that the highly inelastic nature of energy markets means that the tax would not work effectively. There would be little impact on consumer behaviour, even at $10 per barrel. Petrol prices would go up by no more than 6 per cent. Domestic fuel prices would also be virtually unaffected. But all consumers would be hit indiscriminately including those who have invested in energy efficiency. Worst hit would be those on low incomes who spend proportionately more on fuel.

The Committee recommend instead that the EC should devote its efforts towards the drive for greater energy effi-

ciency which they see as "the key policy to tackle global warming". This they believe is cost effective and would enhance competitiveness.

*The 8th Report (Session 1991-92) from the House of Lords Select Committee on the European Communities, *Carbon/Energy Tax* (HL Paper 52), is available from HMSO, price £23.80.

RCEP TRANSPORT STUDY

The Royal Commission on Environmental Pollution is carrying out a study of the impact of transport on the environment. In particular, it will look at the options for developing transport strategies aimed at reconciling the necessary movement of people and goods with the need to protect the environment, to ensure human health and safety and to provide for the social needs of urban and rural communities. In this context, the relationship between transport and land use planning will be taken into account. The study will consider the contribution of transport to emissions of greenhouse gases and atmospheric pollutants, and the effects of traffic and transport infrastructure on both natural habitats and the manmade environment. It will also look at the scope for technological, regulatory, fiscal and other measures which, in the medium to long term, could lead to the development of an environmentally sustainable transport policy.

Written evidence is required by the end of August.

SOLVENT BASED PAINTS

In 1989 the World Health Organisation published results of research into potential risks associated with occupational exposure to paint manufacture and painting. The report identified 78 potential health risks and concluded that painters were more at risk from cancer than those working in paint manufacturing; it said that there was a "consistent excess of all cancers, at about 20 per cent above the national average and a consistent excess of lung cancers, at about 40 per cent above the national average". Other health risks identified included allergic and non-allergic contact dermatitis, chronic bronchitis and asthma, as well as adverse effects on the nervous system.

As a result the Union of Construction Allied Trades and Technicians decided to carry out a survey among its members, not least because of the numbers reporting health problems as a result of working with some paints. The results of the survey were published in February 1991, and while the sample was small, it does show a significant number of serious health problems. Of the 265 respondents, 249 reported problems of ill health either while painting or immediately afterwards, with 93 per cent of those using solvent based paints, or related products, reporting problems. The most frequently reported problems were headaches, nausea and running eyes or nose. Twenty-six per cent of respondents also reported more serious problems, including lung diseases and ulcers although the report recognises that because of the size of the sample no clear link can be drawn between the incidence of disease and use of solvent based paints.

However, UCATT says that the results of the survey would indicate that stricter controls on the use of solvent based paints are needed and that more should be done to encourage the use of water-based paints. Already it has reached agreement with several local

authorities to either restrict or phase-out the use of solvent-based paints.

AGRICULTURAL POLLUTION — SCOTLAND

A Code of Practice on the prevention of Environmental Pollution from Agricultural Activity has been published by the Scottish Office. It covers the prevention of air, soil and water pollution in Scotland. Only those parts of the Code covering water pollution have been given statutory backing under the *Water (Prevention of Pollution) (Code of Practice) (Scotland) Order 1992.*

The Code summarises all the various pieces of legislation in Scotland of relevance to the control of agricultural pollution. It provides advice and information on principles of land application and storage of livestock wastes, their management and disposal; silos and silage effluent; other organic wastes often disposed of to land; agricultural fuel oil and waste oil; waste treatment technology; sheep dip (use and disposal); pesticides; disposal of animal carcases; nitrates; straw and stubble burning and muirburn (a means of managing the vegetation of upland grazings); control of odours and ammonia emissions; disposal of waste products and litter; soil protection.

The various pollution problems caused by incorrect — or inadvisable — treatment and disposal practices are summarised, together with the advantages and disadvantages of various recommended good practices and action necessary to comply with legislation.

In England and Wales there is a statutory Code of Practice covering the prevention of water pollution which came into effect in October 1991. A *Code of Good Agricultural Practice for the Protection of the Air* covering England and Wales is currently being finalised and a separate Code on the protection of soil is to be drawn up.

AIR QUALITY INFORMATION

Members of the public can now obtain daily air pollution information on a freephone number 0800 556677. A recorded message from the Department of the Environment gives air quality monitoring and forecast data, and advice about health effects during air pollution episodes.

NSCA is urging the media to consider including the number of the Air Quality Information Service in weather reports and forecasts. Air pollution from sulphur dioxide and nitrogen dioxide regularly hit the official "poor" category this winter; prior to Christmas there was an extended "very poor" nitrogen dioxide episode — and indeed results from a survey carried out by Warren Spring Laboratory for July-December 1991 showed that average concentrations of nitrogen dioxide have risen 35% over the same period in 1986, when a similar survey was carried out. As summer approaches the likelihood of summer smog (ozone) episodes is increasing. Public concern about pollution remains very high, and this phone line is a useful source of information and advice. NSCA believes that people should have access to environmental information, including air quality data: the media can perform a vital public service in signposting such sources of information.

The Department of Environment has launched two new leaflets aimed at helping the general public to safeguard air quality: *You and the Ozone Layer*

alerts consumers to what products still contain CFCs and other ozone depleting substances. It gives advice on what to do with your old fridge or freezer, and also lists the chemical names of ozone depleting substances as they might appear on some products.

The second leaflet contains advice designed to inform people about what they can do to help reduce the occurrence of summertime photochemical smog. It explains what photochemical smog is and why it can be harmful. The leaflet advises that people sensitive to ozone may feel uncomfortable when breathing, or experience irritation of the eyes and nose when levels are high. It also contains practical advice which, if followed by a sufficient number of people, will help to reduce serious episodes of ground-level ozone.

NOISE AWARENESS MONTH — AUGUST

Summertime, with open windows and outdoor events, is a prime time for noisy activities. A number of organisations with noise interests are combining forces in August to raise awareness of noise nuisance and tackle some of the problems.

Summer noise problems include music from cars and radios in public places. Many radio stations have a good track record of encouraging listeners to "turn it down" during the summer, but others still tend to emphasise "turn it up" attitudes. NSCA will be writing to radio stations asking them to remind listeners about outdoor noise during the summer. As a minimum, DJs and radio jingles should avoid the repetitive incitement to "turn it up". The Campaign for Peace and Quiet will also be asking its members to monitor radio station attitudes to noise, whilst NSCA's National Noise Committee plans to investigate action that local authorities could take in co-operation with local radio stations.

Some NSCA members have suggested the use of powers under S.71 of COPA to produce a code of practice for radio stations on exhortations to noisemaking. As with other Codes it would have no direct legal authority, but compliance with the Code might be taken into account when considering applications for, or renewal of, broadcasting licences. This approach is not thought to be favoured by DOE!

The month will also see activities on a wider range of noise issues, including the launch of IEHO's *Code of Practice on Clay Pigeon Shooting* and DOE's official guidance on noisy parties. An update of the DOE's *Bothered By Noise* leaflet is also promised. We hope to use these opportunities to promote discussion on noise nuisance throughout August.

CLAY PIGEON SHOOTING

In answer to a Parliamentary question from Mrs Ann Taylor MP, Environment Minister David Maclean indicated that the draft code of practice on clay pigeon shooting, which has now been under consideration since 1986, was still nowhere near finalisation. He said "Two consultation exercises have demonstrated that there are complex technical issues which have still not been resolved". In the meantime the IEHO is to issue guidance to its own members.

In a separate statement the Minister told MPs that land contaminated by lead — thus including land used for clay pigeon shooting — would require to be

registered on the contaminated land registers which are due to be established.

NOISE CODES OF PRACTICE

Environment Minister David Maclean also told Ann Taylor (see above) that his officials were discussing a code of practice on audible bird scarers with the National Farmers Union and that he was considering whether to approve a draft code on off-road motorcycling.

NOISE CONSULTATION PAPER

Improved control over outdoor noise nuisance should result from a DOE consultation paper, issued on 9 June, on proposed changes to noise legislation. The proposals include two long-standing NSCA policy objectives; the extension of statutory nuisance powers to include noise in the street, and a widening of the street noise controls contained in S.62 of COPA. In the wake of the Batho report, tighter controls on intruder alarms are also envisaged. NSCA's National Noise Committee is preparing a detailed response to the proposals.

CONSTRUCTION NOISE

The British Standards Institution has published a revised version of Part 4 of BS 5228 on Noise Control on Construction and Open Sites. Part 4 is a code of practice for noise and vibration control applicable to piling operations. It includes recommendations for noise and vibration control to ensure good practice and enable piling operations to be carried out both economically and with as little disturbance as possible to the surrounding community. It also contains recommendations for noise control and for mitigating the effects of ground-borne vibration.

WASTE MANAGEMENT PAPER No. 1

WMP No. 1, first published in 1976 has now been updated. It provides guidance on the options available for waste treatment and disposal. It also gives technical information on the treatment and safe disposal of particular types of waste, licensing guidelines. Applicable to England, Wales and Scotland, WMP No. 1 is available from HMSO, price £10.50.

ENERGY SAVING TRUST

British Gas, OFGAS and 11 of the Regional Electricity Companies (RECs) in England and Wales have agreed to establish an independent Energy Savings Trust which will develop and propose programmes to promote the efficient use of energy. The Energy Efficiency Office will be taking forward the development of the Trust with British Gas and the regional electricity companies over the coming year.

Three initial pilot schemes are being proposed by British Gas which are intended to:

- ★ finance improvements in the efficiency with which gas is used in low income households;
- ★ provide incentives and advice for those replacing their heating systems so as to encourage the maximum cost-effective improvement in the efficiency with which they use gas; and
- ★ stimulate investment in combined heat and power (CHP) schemes that benefit tariff customers, such as small-scale or residential applications in the domestic and commercial sector.

It is envisaged that other gas-related schemes will be devised to complement the initial three. Since the first schemes will be pilot projects, the costs of the programme in the first year are unlikely to exceed £6 million, but the level of expenditure can be expected to rise in subsequent years as further schemes are developed and allowed by OFGAS.

Proposals developed through the Trust by the regional electricity industries could include the development of heat pump technology to reduce heating costs, and the improvement of domestic building insulation standards. Other RECs have also shown an interest in the Trust, as well as the two Scottish electricity companies. Further detailed discussions will need to take place to establish how best the electricity industry can become involved in the Trust.

BOOKS AND REPORTS

BIOLOGICAL WASTE AIR/WASTE GAS PURIFICATION — BIOFILTERS

(German/English), December 1991. DM 85 from Beuth Verlag GmbH, P.O. Box 11 45, 1000 Berlin 30, Germany.

The latest version of Guideline VDI 3477 details the fundamentals of biological waste gas purification in biofilters and enumerates the production and waste disposal of recycling facilities, the waste gases of which have so far been purified successfully with this technology. Stress is not only laid upon the elimination of odorants but also on specific pollutants or groups of materials. The emitters concerned are mainly companies for food processing, sewage plants, certain chemical plants, foundries, solvent-using production and processing plants, etc. There is a section on "gas measuring techniques and evaluation" which gives advice on the methods to be applied depending on the goal of an investigation, with particular distinction being made between methods referring to materials determination and to odour assessment.

POLLUTANT INDUSTRIES

Loss Prevention Council, 1992. £25.00. ISBN 0902167057.

The report looks at 25 industries and their potential to pollute in the light of proposed EC legislation which will increase the likelihood of prosecution of those industries. It recommends that insurers encourage industry to identify and control potential risks.

AUTOMOTIVE FUELS, ENVIRONMENTAL AND HEALTH IMPLICATIONS

Institute of Petroleum, 1991. £60.00. ISBN 0852931034.

Conference proceedings covering environmental law in Europe and USA, health effects, pollutants, fuel formulation and engine development.

A SURVEY OF GASSING LANDFILL SITES IN ENGLAND AND WALES

Friends of the Earth, 1992. £7.00. ISBN 1 857501101.

In April 1991 HMIP published the results of a survey of Waste Disposal Authorities, concluding that 1006 sites needed controls. However the locations of the sites were not identified. This report is compiled from information supplied by less than half of the Waste Regulation Authorities and identifies the location of 454 sites. It reveals confusion as to the source of the data in the HMIP report, as well as the concern of many WRAs at delays in implementing sections of the *Environmental Protection Act* — particularly those covering management of old landfill sites and public access to information.

SULPHUR CYCLING ON THE CONTINENTS, SCOPE 48

Eds. R. Howarth, J. Stewart, M. Ivanov. John Wiley, 1992. £75.00. ISBN 0471931533.

The fourth and final in Scope's series on sulphur. It examines sulphur cycling in wetlands and other ecosystems, the atmospheric sulphur cycle including natural and industrial sources and summaries of the latest information on fluxes of sulphur from tropical ecosystems to the atmosphere.

ACUTE EFFECTS ON HEALTH OF SMOG EPISODES

Ed. F. Theakston. World Health Organisation, 1992. Sw.fr.14. ISBN 9289013060.

The book assesses the risk to health of exposure to elevated concentrations of pollutants during summer and winter smog episodes. It considers the differing responses to smog episodes between countries, and recommends that during moderate episodes advice should be issued to the public, and during severe episodes emergency measures such as limiting road traffic and closing schools should be considered.

SAVING OUR PLANET

M. Tolba. Chapman Hall, 1992. £17.95. ISBN 0412473704.

Subtitled "Challenges and Hopes" the book analyses the changes in the environment in the last two decades. A summary of the current state of the environment is followed by sections on development activities, human well-being, attitudes and priorities for action. It is based on a broad review of literature and reports and concludes with a list of targets to be achieved in the next 20 years.

CHANGING COURSE. A GLOBAL BUSINESS PERSPECTIVE ON DEVELOPMENT AND THE ENVIRONMENT

S. Schmidheiny. The MIT Press, 1992. £9.95. ISBN 9780262691536.

The book brings together expertise from leaders of more than 50 multinational corporations, to show how the business community can work towards sustainable development. A selection of case studies demonstrate how best practices can be achieved, and how partnerships can be forged between government and industry and between developing and developed countries.

GASEOUS POLLUTANTS, CHARACTERISATION AND CYCLING

Ed. J. Nriagu. Wiley-Interscience, 1992. £47.49. ISBN 0471548987.

Part of the "Advances in Environmental Science and Technology" series, this volume looks at various techniques for sampling gaseous contaminants to the atmosphere. It looks at current research results and evaluates the present state of measurement technology.

INCINERATION AND THE ENVIRONMENT

Institution of Mechanical Engineers, 1992. £25.00. ISBN 0852988109.

A sourcebook detailing the latest information on organisations, literature, and databases concerning incineration.

HIGHWAY POLLUTION

Ed. R. Hamilton, R. Harrison. Elsevier, 1991. US $166.50. ISBN 444881883.

The book covers all aspects of air, water and noise pollution in the vicinity of roads, and sets out to present a coherent overview of the topic, with contributions from experts worldwide.

WHY WASTE IT?

Simon & Schuster, 1992. £3.99.

A series of books on waste for young children covering aluminium, paper, glass and plastic. Each title covers the manufacture, uses and disposal of the material in question, and suggests ways of minimising and recycling waste.

WINDSCALE 1957 — ANATOMY OF A NUCLEAR ACCIDENT

L. Arnold, 1992. £40.00. ISBN 0333482522.

Using new information the book examines the causes, effects and political aspects of the first serious nuclear reactor accident in the world and assesses its impact on Britain's nuclear programme.

REFINING AND FORMULATION: THE CHALLENGE OF GREEN MOTOR FUELS

A. Seymour, Oxford Institute for Energy Studies, 1992. £14.00. ISBN 0948061.

As the largest consumer of oil in the world, any changes in the US oil industry as a result of environmental regulation could have implications for the environment as well as the world oil market. This study examines the impact of fuel regulations in the US Clean Air Act 1990 on the US refining industry.

FUTURE EVENTS

7 JULY — ENGINE EMISSIONS MEASUREMENT
A short course to explain the function of heated on-line gas analysis systems for CO_2, CO, O_2, UHC, NOx and SO_2 measurements from engines, demonstrated by a working system with data-logging onto a computer. Computer processing of gas analysis measurements to derive air/fuel ratios, combustion efficiency, temperature and various pollution parameters will be discussed.
Venue: University of Leeds.
Details: Dianne Taylor, University of Leeds. Tel: 0532 332511.

7-10 JULY 1992 — LIVING WITH INDUSTRY — THE NEXT TEN YEARS
Sessions will look at the past and present relationships between the urban environment and the quality of life; the role of local government in monitoring, managing and improving local environments — the European experience; environmental awareness raising and understanding; case studies; and the responsibility of industry towards the environment.
Venue: Huddersfield Polytechnic.
Details: Dr A S Trescott, Huddersfield Polytechnic. Tel: 0484 422288 ext 2349.

8 JULY 1992 — A CLEARER VIEW: AIR POLLUTION AND HEALTH IN THE SOUTH EAST THAMES CORRIDOR
The South East Thames corridor has been earmarked for major development. How will this affect the health of people living and working within the corridor. The conference will draw on recent developments in national policies on air pollution, waste management and power generation, together with research into the effects of air pollution on health.
Venue: Orchard Theatre, Home Gardens, Dartford.
Details: John Rice, Director of Environmental Health, South East Institute of Public Health. Tel: 0892 515153 Fax: 0892 516344.

16-18 JULY — CHEMISTRY, AGRICULTURE AND THE ENVIRONMENT
Management of the use of agrochemicals and related materials is a matter of growing concern throughout the world. The aim of this conference is to provide a forum for agrochemical producers, risk assessment professionals, regulators, and academics, and all those with an interest in the safe and effective use of agrochemicals.
Venue: University of Surrey, Guildford.
Details: The Robens Institute of Health and Safety. Tel: 0483 509220.

30 AUGUST-4 SEPTEMBER — 9TH WORLD CLEAN AIR CONGRESS
Triennial international congress of the International Union of Air Pollution Prevention Associations providing a unique forum for pollution control professionals to exchange views and knowledge. Subjects covered range from atmospheric deposition, indoor air quality, transport and waste management issues, risk assessment, emissions inventories and dispersion modelling.
Venue: Queen Elizabeth Hotel, Montreal, Canada.
Details: Full programme available from NSCA. Tel: 0273 26313.

14-17 SEPTEMBER — ENVIRONMENTAL HEALTH CONGRESS AND EXHIBITION
The theme 'Towards a safer future' reflects the fact that the European Year of Safety, Hygiene and Health Protection at Work commenced in April 1992. Papers to be presented include the Social Charter on health and safety; training in health and safety; health and safety, the local authority role; risk assessment and health and safety in the leisure industry. There will also be papers covering food and general health, housing, pollution control and environmental health policy and management.
Venue: Bournemouth International Centre.
Details: Laura O'Keeffe, IEHO. Tel: 071 928 6006.

21-22 SEPTEMBER—SITE INVESTIGATIONS FOR CONTAMINATED LAND
Site investigations have long been regarded as an essential first step in the planning and construction of new developments. This conference will describe good practice, the need for site investigations and the confidence that can be placed upon collected data. It will examine sampling and analytical techniques which are available for onsite use, and techniques and procedures used in the USA and Europe.
Venue: Inn on the Park Hotel, London W1.
Details: Sarah Cope, IBC Technical Services Limited. Tel: 071 637 4383
Fax: 071 631 3214.

21-23 SEPTEMBER — INCINERATION AND ENERGY FROM WASTE
A short course providing a detailed introduction to the incineration process in all its aspects and associated problems. Specialist lectures on the theory and practice of incineration including combustion, incinerator design, refractories and pollution will be combined with industrial experience of incineration of different types of waste.
Venue: University of Leeds.
Details: Dianne Taylor, University of Leeds. Tel: 0532 332511.

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EDITORIAL

PROMISES, NOT PROGRESS

When the environment White Paper *This Common Inheritance* was published in 1990, one of its most welcome commitments was to an annual review of progress. The second annual review, published this October, is long on promise but short on progress. This lack of demonstrable progress is hardly surprising given that the original was coy on measurable targets by which any progress could be judged.

The Society welcomes many of the promises — particularly the new discussion papers on integrating air pollution monitoring, and the commitment to effects-related targets for benzene, particulates and carbon monoxide by 1994. But beyond the detail there is a narrow vision at national and international level. The primacy of transport as a threat to environmental quality is recognised but the solutions proposed have the familiar ring of earlier failures. There are no realistic proposals to reduce the overall transport intensity of the economy, which offers the only real long term solution.

The framework for a national sustainability plan, promised after the Earth Summit, remains sketchy. NSCA was looking for a commitment to targets for air quality and critical loads, with specific sectoral targets for transport, industry, energy, agriculture, commercial and domestic sectors. The Government is still fighting shy of sectoral targets, but they are fundamental to any assessment of the effectiveness of sustainable development.

The new "big idea" — a general presumption in favour of economic instruments rather than regulation in the development of environmental policy — appears simplistic in this context. Without clear-cut policy targets it will be difficult to fine-tune the mixture of incentive carrot and regulatory stick to achieve agreed environmental objectives at minimum cost. Sectoral targets for environmental quality come first; the most appropriate mix of strategies, planning guidelines, fiscal policy, investment criteria, public awareness campaigns, and other instruments, follows. Their relative effectiveness can then be reviewed annually as part of the White Paper review process.

The Government's dedication to environmental monitoring and public reporting tells us, with increasing detail, where we are today. What is still missing is a clear view of where we want to be in the future, and how we plan to get there. This second White Paper review indicates that the Government is only beginning to develop a framework which addresses that need.

NSCA VIEWS

ROYAL COMMISSION ON ENVIRONMENTAL POLLUTION STUDY INTO TRANSPORT AND THE ENVIRONMENT

1. INTRODUCTION

Transport has a wide range of impacts on society, the economy and the environment. NSCA's submission to the Royal Commission concentrates on air quality and local environmental quality, particularly noise. This evidence is limited to road transport, briefly reviewing our main areas of concern, assessing the policy instruments which might bring about change, and considering the policy framework required to reconcile the demand for transport services with the broader objectives of sustainable development.

Air Quality

Analysis of Department of the Environment (DOE) statistics[1] for the last decade indicate that road transport is the only sector where emissions of all the major air pollutants are still increasing. Other major sectors such as power stations, industry and domestic, are now generally less polluting than they were ten years ago. Road transport also produces emissions at ground level in urban streets and is thus closely associated with direct human exposure.

Two-fifths of black smoke comes from road transport, mainly diesels. Diesel smoke has health concerns; it is recognised as a potential occupational carcinogen, and has a possible relationship with allergic reactions. It is now the major cause of soiling in cities. The visibility and odour of diesel smoke assault our senses directly and make urban streets unpleasant places in which to sit, walk, cycle or drive.

Half of all nitrogen oxides (NOx) emissions result from road transport. NOx has direct human health effects, exacerbating respiratory problems and reducing lung function. It also contributes to acid deposition. Emissions of NOx and volatile organic compounds (VOCs) also act as precursors for the formation of ozone (O_3), the primary constituent of photochemical pollution.

Road transport produces over a third of UK VOC emissions. VOCs contribute to photochemical oxidant formation and some, for instance 1.3 butadiene and benzene, are carcinogenic.

Nearly all UK emissions of carbon monoxide (CO) come from road vehicles. CO is the most directly toxic pollutant, reducing oxygen transport in the bloodstream. It also has direct and indirect implications for the greenhouse effect by reacting with hydroxyl

(OH) radicals that would otherwise remove trace gases such as methane, and by oxidising to CO_2.

One fifth of UK carbon dioxide (CO_2) emissions arise from road transport, a figure which is likely to increase. CO_2 is not directly toxic, but is the most important greenhouse gas; the UK contributes over 2% of world man-made CO_2 emissions.

Although motor vehicles are still the most widespread source of lead in air, the progressive introduction of low-lead and unleaded petrol from the mid-1980s will ensure that this is a diminishing problem.

Monitoring undertaken for the DOE indicates that World Health Organisation (WHO) Guidelines are exceeded occasionally for CO and regularly for NOx in urban areas. Monitoring undertaken by or on behalf of local authorities does much to reinforce this view. For both pollutants, road transport is the most significant source. Monitoring in rural areas reveals occasional exceedences of WHO Guidelines for ozone during the summer, with considerable variation from year to year.

Air pollution also has effects on crops and natural ecosystems where critical loads are exceeded. Critical loads research, although still being refined, offers the potential for assessing the contribution of road traffic pollution to damaging forestry, agriculture and natural communities.

The effects of air pollution on buildings appears to have been given a low priority by the Government (for instance, it has no plans to continue the work of the Acid Deposition Building Effects Review Group which produced an interim report in 1989[2]). However there is no doubt that road transport emissions make a contribution here also.

It will be for specialists to provide an assessment of the health, biological and material effects of pollutants; the relative contribution made by transport sources; and the extent to which the competing factors of improving vehicle emission standards and rising traffic volumes will affect air quality. NSCA's concern is to develop agreed targets for air quality and critical loads, with specific sectoral targets for transport, industry, energy, agriculture, commercial and domestic sectors. We would emphasise here the central importance of reliable air quality monitoring and emission inventories, without which effects cannot be assessed and the success of policy cannot be measured. NSCA believes that, given the considerable resources already devoted to air quality monitoring, a more coherent picture of local and national air quality could be produced. The Society is actively engaged in discussions with the DOE on this point.

Noise

Surprisingly little evidence exists on the extent to which ambient noise levels have increased — if at all — in recent years, and whether this may be attributed largely to transport noise. In fact average ambient noise as such has little meaning because noise is very much a local effect. The effect of increasing traffic is not so much to increase theoretical ambient levels (a doubling of traffic volume is required to give a barely perceptible 3dBA increase), as to spread noise into previously quiet areas and roads, and into previously quiet periods of the night[3].

The contribution of transport noise to local environmental quality is reflected in Open University survey figures which suggest that road traffic is the main source, or one source, of noise in 62% and 92% of households respectively[4]. Corresponding figures for aircraft are 2% and 32%, and for railways 1% and 15%. Research[5] by the Building Research Establishment (BRE) suggests that 11% of the adult population of England and Wales is disturbed by traffic noise and 7% by aircraft.

International data[6] suggests that transport noise in developed countries is generally increasing, but the evidence which does exist for the UK appears to suggest that ambient noise levels have in fact changed little over the past twenty years. However a study by BRE shows that 7% of dwellings in England and Wales are subjected to noise levels above 68 $dBL_{A10,\ 18h}$ — the level at which highway authorities must offer insulation to householders affected by new road developments. The Report of the DOE Noise Review Working Party (the Batho Report), on which the Society was represented, recommended[7] that this level be reduced — possibly to 65 $dBL_{A10,\ 18h}$ — to reflect changes in social expectations.

Grants for sound insulation are available where new road schemes cause traffic noise levels to rise above 68 $dBL_{A10\ 18h}$. Grants are not, however, available where noise exceeds this level on existing roads due to a general increase in traffic. The extension of grants was reviewed some years ago by a DOT Working Party on the Noise Insulation Regulations, but a final report was not published. Its recommendations were believed to include that roads where traffic levels increased as the result of new road development (for instance motorway feeder roads) should also qualify for compensation. This was echoed in recommendation 18 of the Batho Report, and the Government response is still awaited.

Again, we defer to specialists on the effects and attribution of noise pollution. As with air quality, our concern is to agree measurable noise level guidelines to serve as policy targets and we emphasise the importance of a nationally co-ordinated noise level monitoring database against which policy initiatives may be measured. This does not currently exist.

2. INTEGRATING POLICY

People want transport services, but this desire must be reconciled with other social, economic and environmental aspirations.

The importance of integrating environmental objectives and sustainable development planning into all sectors of Government policy was firmly established in the Rio Declaration on Environment and Development. In signing the Maastricht Treaty, EC member states formally accepted that *"sustainable and non-inflationary growth respecting the environment"* should be a principal policy objective. What will this mean for transport policy?

Subsidiarity and the European Framework

The draft European Community (EC) Fifth Action Programme for the environment "Towards Sustainability"[8] identifies five main target sectors, including transport. It sets a framework based on environmental targets, and the measures and instruments

necessary to achieve them. An EC Green Paper "A Community Strategy for Sustainable Mobility"[9] further elaborates proposals for a Community transport strategy *"based on a global approach [which] would promote sustainable mobility by integrating transport into an overall pattern of sustainable development"*. The paper recommends that *"the principle of subsidiarity will play an important part in ensuring that the strategy is given full effect by appropriate national, regional and local initiatives"*.

NSCA welcomes the recent clarification[10] by the Secretary of State for the Environment that subsidiarity is the principle that a central authority should perform *". . . only those tasks which cannot be performed effectively at a more immediate or local level. . ."*. The task of Government is therefore to ensure firstly that national policy reflects the European framework, and secondly that appropriate policies and resources are made available to those — whether at national, regional and local level — who are best placed to deliver the improvement we seek. In many cases both the problems and solutions will be found to reside at sub-national level.

National Targets

In its response to the Sustainable Mobility concept, we consider that the Government should set a number of targets (including air quality and noise as well as other environmental and social factors), evaluate the potential contribution of the measures and instruments available by sector, and produce a plan which aims to meet these targets at minimum cost. This will require a wider view of costs and benefits than is usually applied in traditional cost benefit analysis.

3. MEASURES AND INSTRUMENTS

The policy measures and instruments available to the transport sector are varied but fall into two areas; the control of pollution from individual sources (largely through the application and enforcement of emission standards), and the management of demand for transport services, which affects the use and distribution of such sources.

Emission Standards

There is a trend towards tightening standards both for petrol and diesel vehicles. In the case of the former this virtually guarantees the use of catalytic convertors, whilst the latter will require tightening fuel quality standards in the form of low-sulphur diesel. If Europe follows the example of the United States we will also see a further tightening of emission standards (already proposed), increasing discussion about reformulated fuels, electric vehicles, biofuels, and other alternative fuels.

What these trends have in common is a focus on local air quality and the four 'regulated' pollutants: NOx, VOCs, CO and particulate matter (PM). However welcome from the local air quality perspective, they may result in increased emissions of other air pollutants — for instance some other hydrocarbons, nitrous oxide, hydrogen sulphide or CO_2. By comparison, EC action on energy efficiency standards for motor vehicles — important from the CO_2 standpoint — has been largely ineffectual to date. Furthermore, the emphasis on "tailpipe" emissions does not take into account the full implic-

ations of resource use and pollution throughout the lifecycle of the product. To take three examples, reformulating petrol or removing sulphur from diesel fuel has an energy cost with attendant CO_2 emissions; electric cars simply displace the emission control requirement to large combustion plant; biofuels may support or increase intensive agricultural practices.

Whilst it is difficult to balance local air quality against — roughly speaking in these examples — global warming, acid deposition and water pollution, the current EC strategy does not even make a start. Nor does it consider whether the extra expense imposed on society by tightening standards might produce similar or better environmental benefits if diverted instead to investment in demand management. The "global approach" advocated by the EC is not yet in evidence, and there is no independent agency in the UK with the expertise to adopt such an approach on a national basis. Our comments on the potential role of the proposed Environment Agency, below, are relevant in this respect.

We also look to the UK, during its presidency of the EC, to accelerate the development of energy efficiency standards for cars. There is much less scope for improving fuel efficiency from HGVs and the polluting contribution of freight transport in an expanding European market is a particular source of concern. It would require a considerable shift of freight to the rail network to make any significant impact in this respect.

The EC proposes improved noise standards for all road vehicles, although the exact standards and implementation dates are still subject to debate. As the noise from individual engine/exhaust systems is attenuated, so the noise from aerodynamic drag and tyre-road interface becomes more significant. This is partly a function of speed (see comment on speed limits, below), but also relates to the structure of the road surface. We welcome the belated acknowledgement[11] by the Department of Transport (DOT) that low-noise road asphalt may have a role to play in this regard.

Enforcement

If the setting of emission standards is the legitimate province of the EC, the enforcement of standards requires local action within a national framework. There is little value in setting tight emission standards at the point of production if, once on the road, vehicles fail to meet them through poor maintenance or deliberate tampering. The hierarchy of control is firstly, to set emission standards, secondly to check compliance at routine MOT tests, and finally to detect non-compliance on the road. Despite some recent improvements, the UK enforcement system remains imperfect.

In 1991 emission testing was introduced for the first time into the MOT test for petrol cars. NSCA had campaigned for this, but was disappointed at the 4.5% CO pass standard finally adopted. Many modern cars are capable of meeting much tighter standards and we would prefer to see a system based on manufacturers' type approval standards, with a resonable margin of error. A draft EC Directive[12] now proposes testing (the so-called Euro-MOT) based on exactly this principle. We hope that the Government will use its presidency of the EC to secure agreement on this issue, and commit the UK to a system based on manufacturers' standards. The increasing sophistication

of electronic engine management systems combined with on-board data logging may also have a role in future emission control enforcement.

Remote emission sensing in the US[13] and UK[14] has shown that a small proportion of the vehicle fleet is responsible for a large proportion of total emission and that this may often be attributed either to poor maintenance of conventional or catalyst-equipped vehicles, or to deliberate tampering with emission control equipment. Furthermore, relatively new vehicles have been observed to be failing emission standards well in advance of their first MOT test. Even with a strenghtened MOT test, therefore, there is a need to introduce improved roadside testing for gaseous emissions, smoke and noise, to detect those who contravene the legislation through ignorance or wilful deceit.

We welcome recent technical advances which bring the roadside sensing of smoke and gaseous emissions close to practicability, and the Government's commitment that such tests will be extended to include cars and light vans in addition to heavy goods vehicles (HGVs) and public service vehicles (PSVs). The same cannot be said of roadside noise testing where many vehicles — particularly motorcycles — are subject to deliberate tampering, usually by removing silencer baffles. NSCA has undertaken field trials of motorcycle noise tests and published proposals[15] for an agreed testing methodology, but the official response has been negative.

We contend that the reason for slow progress in this sphere is due to a confusion of responsibilities. The police are responsible for enforcing the Construction and Use Regulations and thus have nominal control over nuisance emissions such as noise and smoke. They also enforce road speed limits, which has a bearing on gaseous emissions and noise. DOT Inspectors, often in co-operation with local authority trading standards officers, undertake roadside checking of HGVs. Several local authorities, with advice from NSCA and following recommendations made by the RCEP 15th Report "Emissions from Heavy Duty Diesel Vehicles", have implemented smoke-spotting programmes, although they have no direct legal powers.

A system of in-use detection must form an important part of any strategy to limit and reduce emissions from road vehicles. It should aim to be effective directly, by detecting and apprehending polluters on the road, and indirectly by providing encouragement to maintain vehicles and a reasonable deterrent against tampering. The current piecemeal approach is characterised by a low level of detection and enforcement shared between three different agencies with differing powers and priorities. This system is incapable of fulfilling the environmental protection potential of in-use detection.

The technology now exists to detect the exceedance of emission standards for gaseous pollutants, smoke and noise. Where detected, vehicles should be required to rectify faults and provide evidence of an MOT retest within a specified time. The next step is to set targets for the frequency and geographical distribution of roadside checks; this should emphasise areas where agreed guidelines for air quality, smoke and traffic noise are exceeded.

We look to the Royal Commission to establish consensus on a lead authority with overall responsibility for enforcement in this area. In correspondence with NSCA[16],

the Association of Chief Police Officers has shown little enthusiasm for developing a police role in pollution control, and the evidence is that the police are only of limited effectiveness in enforcing the current speed limits (see our comment on speed limiters, below). DOT Inspectors carry out HGV roadside tests, but these are relatively limited in number and tend to take place on suitable sites outside urban areas. They therefore fail to target urban pollution, particularly cars and buses. Aside from a tangential role in trading standards, local authorities have no legal powers, but NSCA's previous evidence to the Royal Commission on smoke-spotting programmes shows that a potential role exists. Current DOE proposals to extend the noise nuisance powers of local authorities under the *Environmental Protection Act 1990* to include the highway could be further extended to include pollution from road vehicles in general. In all cases, a testing programme of reasonable size would require a considerable investment of resources in equipment and personnel.

If none of the three above-mentioned candidates for enforcement are able to meet this challenge, a fourth option would be the new Environment Agency. Current Government proposals for the Agency are too narrowly drawn; it seems extraordinary, given the all-pervading environmental impact of transport, that this is excluded from the Agency's remit. There would be a clear advantage in giving the Agency responsibility for designing and enforcing a roadside testing programme to meet environmental targets.

Demand Management

Our optimistic scenario for the future is thus populated by vehicles of appropriate size and power/weight ratios with tight emission standards supported by regular MOT testing and roadside spotchecking. However the projected rise in road traffic will offset much of the environmental gain to be made from individually "cleaner" vehicles[17]. Current trends promise only marginal improvements in air quality and an inexorable rise in CO_2 emissions. The total impact of traffic growth is, of course, more wide-ranging than air pollution; any policy which simply aims to meet the growing demand for road transport services will inevitably result in the misallocation of economic, natural and human resources. A more sophisticated policy would aim to manage demand in order to meet a broader range of social, economic and environmental objectives.

The overall aim of demand management should be to influence the frequency, average length, and mode of individual journeys. This will be achieved by securing changes in the modal mix (for instance between road and rail, public and private transport, cycling and walking) and in the structural mix (for instance in the average size of vehicle engines or the proportion of petrol and diesel vehicles). Improvements in the efficient use of current capacity is an important corollary of demand management. A brief assessment of the main policy instruments follows.

Planning Control

Prevention is better than cure. Current DOE guidance[18] indicates that development plans *"provide the primary means of reconciling conflicts between the needs for development, including the provision of infrastructure, and the need to protect the built and natural environment"*. It will be important to capitalise on improvements in

industrial pollution control which make co-location of residential accommodation and industrial development more attractive. This reverses the trend of the last hundred years and the planning system must adapt to reflect this.

Where emission inventories, environmental audits and monitoring programmes identify pollution problems within an area, the development plan can provide a framework for strategic policies to counter such problems. This includes the indirect pollution effects of development due to its consequential influence on road traffic. One study in Bristol has already attempted to develop a planning framework which sets transport scenarios against other social, economic and environmental objectives, including air quality indicators. We welcome the evaluation currently being undertaken for the DOE of the role of planning in reducing the number and/or length of journeys and look forward to the proposed planning guidance on this issue.

Speed Limits

There is a clear relationship between emission of air pollutants and road speeds. Broadly speaking, current petrol engined cars emit most carbon monoxide and hydrocarbons at speeds below 40 mph, and most oxides of nitrogen at speeds above 40 mph. Emissions of carbon dioxide are related to engine efficiency and are thus increased at both low and high speeds, with an optimum around 50-55 mph. Computer modelling[19] suggests that carbon dioxide emissions from cars could be reduced by over 3% simply by enforcing the current 70 mph speed limit.

As EC noise standards for vehicles become progressively tighter, a growing proportion of road traffic noise will arise from aerodynamic and tyre-surface interactions. Both are related directly to speed; in its method of calculation of road traffic noise[20], the Department of Transport allows a correction factor of up to 10 dB(A) between a mean traffic speed of 20 km/hr and 130 km/hr. This is equivalent to a doubling of perceived noise.

The social effects of traffic speeds are less tangible and measurable. Roads with speeding traffic often serve to divide communities, and by creating a negative perception of safety can discourage environmentally benign transport modes: walking and cycling.

At first sight, an across-the-board reduction in road speeds would appear to offer straightforward environmental benefits. However in some situations low road speeds — typified by urban traffic congestion — can actually increase some environmental impacts. The introduction of catalytic convertors will reduce emissions of CO, VOCs and NOx (but not CO_2) from individual cars, but the forecast increases in road traffic will offset this improvement to some extent. CO, VOC and NOx emissions from catalyst-equipped cars are likely to be less speed dependent, but 'cat' cars still produce pollution during the start-up phase — particularly important where most journeys are short urban trips — and will take a decade to dominate the car fleet. In the medium term, therefore, speed limits could still make an impact on cat-regulated air pollutants.

Effective enforcement of the existing national maximum speed limits, or a reduction of the speed limit towards the optimum cruising speed, could secure significant reductions in the transport sector. The introduction of speed limiters, already required for coaches and HGVs, would greatly enhance the effectiveness of speed limit

enforcement. Official figures[21] show that three in five motorists exceed the speed limit on motorways and, as noted above, the police are unable to enforce the law effectively. Mechanically restricting the speed at which cars travel could tip the balance in favour of public transport for many long journeys and would diminish the attraction of large high-performance cars, tending to reduce the average engine size — and thus energy consumption — of the vehicle fleet. It would also signal a change in official attitude; the beginning of the "civilising" of the motor car promised by Cecil Parkinson when Secretary of State for Transport.

Traffic Management

Local planning and road design can do much to mitigate the impact of road vehicles through restricting access, improving traffic flow, modifying driver behaviour and favouring alternative modes. The Society is not competent to comment in detail on the wide range of options and their relative effectiveness, simply noting that this will be an important area for consideration by the Royal Commission.

Fiscal and Economic Instruments

In the 1990 environment White Paper[22] the Government promised to consider *". . .further changes in the taxation of. . .vehicles which might encourage people to seek greater fuel economy in their motoring"*. It also noted that *". . .Taxes can be the most effective means of tackling environmental problems, and so merit serious examination. . .Taxes can be levied at differential rates to reflect the fact that one course of action is less environmentally damaging than another"*. Little action has followed these promising words.

Despite persistent lobbying, successive Chancellors have declined to introduce a differential sales tax to encourage the purchase of low-polluting catalyst-equipped cars. The current glut of inferior pre-catalyst cars on the market is a partial result of this missed opportunity. As new emission standards become mandatory by the end of 1992, the main target for fiscal instruments will now be to encourage vehicle energy efficiency and reductions in use. This could be achieved:

(a) by banding vehicle excise duty according to DOT fuel consumption data for individual models. More radically, Vehicle Excise Duty could be abolished altogether and replaced by a supplement to fuel tax.

(b) by substantially increasing excise duty on automotive fuels across the board.

(c) by abolishing the company car tax advantages which encourage wasteful car use and the purchase of larger cars.

(d) by banding car sales tax to increase the incentive to buy smaller, more fuel-efficient cars.

The tax treatment of other transport-related employment perks — such as free parking — should also be evaluated, whilst incentives to use public transport could receive more favourable tax treatment.

At a strategic level, the economic assessment of transport plans and policies must be adapted to reflect their full social and environmental costs. There has been legiti-

mate criticism of cost benefit analysis techniques and the differing standards used, for instance, in comparisons of investment in roadbuilding or railways.

Consumer Information and Attitude Campaigns

The EC Green Paper notes that *"A strategy which seeks to influence human behaviour towards mobility will need to focus on the attitude of the user towards the car"*. The provision of cheap, safe and convenient alternatives to car use will not of itself guarantee modal shifts; car ownership and use has a cultural dimension which may engender some objectively irrational transport choices.

Use of a car is the most appropriate — or only — mode of transport for many travellers. However to a greater or lesser extent, the ownership and use of a car is equated with status, and many people derive personal pleasure from the power and performance characteristics of their vehicles. A recent discussion paper[23] by the Automobile Association made this point: *"Speed and high performance are the major marketing points of most car manufacturers; car ownership in the future must be marketed as a means of personal mobility enabling the user to travel economically from A to B in safety and with minimal effect on the natural environment. Car owners should be proud of their vehicle's cleanliness and not its performance"*. Unfortunately, many drivers will still resonate more closely with a comment[24] from the AA's sister organisation in Germany: *"It's a man's basic desire to feel the emotional power of acceleration and speed"*.

Psychologists could doubtless advise the Royal Commission on the motives for fast and dangerous driving, on why some people identify so personally with their cars, and thus the reasons why any attempt to limit driver behaviour in the interest of wider social goals is often perceived as an affront to personal freedom. Changing social attitudes towards car use (and non-use) will be an important factor influencing the demand for transport services.

Several interests conspire to portray the car as something rather more important and exciting than a utilitarian mover of people and small loads. The involvement of vehicle manufacturers in motor sport provides a backdrop of speed and acceleration; this is still emphasised in some advertising, and is increasingly reflected in the actual performance characteristics of standard production models[25]. Other advertisements promote the car as a passport to freedom (an increasingly unlikely experience) or environmental acceptability. Whilst conceding that car advertisements are designed to sell cars, we believe there is a case for a Code of Practice on vehicle advertising to prevent an emphasis on performance and unrealistic expectations.

Cars are part of the employment status and reward system in public and private sector alike; currently most employers are insulating employees from their environmental responsibilities. Many people still cherish the belief that a large car reflects their personal status; if so, they should be free to buy one, but within a financial framework which reflects the true cost to society (see the comments on fiscal measures, above). Any organisation undertaking an environmental audit of its activities should distinguish between the legitimate provision of mobility which a person may need for their

job, and the employment perk which distorts the transport market and adds to congestion and pollution. Enlightened employers will wish to consider packages which shift the financial benefits of motoring perks to other areas.

Employers thus have a role in informing and influencing the behaviour of employees. In parts of the US, areas of poor air quality may be subject to Trip Reduction regulations, enforced by the local authority, requiring employers to develop programmes which reduce car commuting by employees. Employers in the UK may consider a similar approach on a voluntary basis as part of any environmental strategy. The Government may wish to consider giving similar regulatory powers to local authorities, as part of a strategy for developing sub-national plans for air quality management.

As in other spheres, the media both reflects *and* affects public attitudes towards motoring. Many people enjoy high-speed car chases and motor racing on television, but in the same way that the media has adopted a largely responsible attitude to the portrayal of smoking, we would welcome policies which limit the glorification of car use and balance them overall with a message of social responsibility.

If the car has an undeservedly positive image, alternatives to car use tend to be associated with negative images. Use of public transport, walking and cycling are often perceived as second best, and the roles of advertisers, employers and the media noted above will be equally important in this regard.

Some may question whether this is a legitimate area for official intervention. NSCA considers that the "freedom" of an individual to use a car must be balanced with the wishes of non-car owners to enjoy reasonable mobility, and the rights of society generally to enjoy improvements in environmental quality and road safety. Where there is potential conflict between individual and social aspirations we look to Government to take a lead.

4. AGREEING A STRATEGY

In many ways, transport policy mirrors energy policy. A policy of simply meeting demand is no longer tenable and cannot be reconciled with a commitment to sustainable development. An emphasis on the efficient use of capacity and demand management to deliver the services which people want, taking into account wider objectives, is more likely to optimise the use of resources.

The EC has set the policy context for achieving this. The UK now needs to agree measurable objectives for transport policy and a strategy for deploying effective policy instruments to reach those objectives.

It is the role of central Government to establish consensus on national targets and to develop strategies, planning guidelines, fiscal policy, investment criteria, public awareness campaigns, and other instruments to attain these targets. These should be reviewed annually as part of the White Paper review process.

We perceive the need for a clearer distinction between the evaluation of policy options and the political choices which are made about those options. NSCA, in its submission[26] on the role of the proposed Environment Agency, made the case for an independent agency which advised Government on environmental policy and was given

responsibility for enforcement. As noted above, current proposals for an EA are focused more narrowly. We believe that any Environment Agency worthy of the name must have a role in the independent assessment and enforcement of transport policy in relation to environmental impact.

Local government should, if the doctrine of subsidiarity is valid, take a major role in developing local and regional plans which aim to integrate transport needs with other social, economic and environmental targets. State of the environment reporting and local environmental management plans will form the basis for policy development. Many powers are already available to local authorities in their responsibilities for planning, highways and pollution control, but these may need to be extended and effective programmes may well demand additional resources. The Local Government Commission should take account of the potential for integrating environmental and transport policy at the sub-national level in its deliberations over reorganisation.

5. CONCLUSIONS AND RECOMMENDATIONS

Road transport is the only economic sector where emissions of all the major air pollutants are still increasing. The projected rise in road traffic will offset much of the environmental gain to be made from improved emission standards.

As part of its national sustainability plan the Government should develop agreed sectoral targets for environmental quality. For the transport sector, the Government should set a number of targets (including air quality and noise as well as other environmental and social factors), evaluate the potential contribution of the measures and instruments available, and produce a plan which aims to meet these targets at minimum cost.

Reliable air quality monitoring is essential to assess effects on health and the environment, and the success of policy measures. Noise level targets should also be agreed on the basis of a nationally co-ordinated noise level monitoring database. This is largely the responsibility of the Department of the Environment, but local authorities have an increasing role to play.

Emission standards should be checked for compliance at MOT tests, and by an expanded programme of roadside monitoring enforced by an appropriate agency. Targets for enforcement should be set. The Government should introduce an MOT compliance standard based on manufacturers' own conformity of production standards.

The planning system has an important role in reducing the number and/or length of journeys; further planning policy guidance from the Department of the Environment is needed in this area.

Lower speed limits could have direct and indirect environmental benefits. The introduction of speed limiters for cars, already required for coaches and HGVs, would greatly enhance the effectiveness of speed limit enforcement. The Department of Transport should consult on this question at an early opportunity.

The main target for fiscal instruments should now be to encourage vehicle energy efficiency and reduce usage. The tax treatment of transport-related employment perks should be re-evaluated by the Treasury.

Changing social attitudes towards car use will be an important factor influencing the demand for transport services. The Advertising Standards Authority should agree a Code of Practice on vehicle advertising to prevent undue emphasis on performance and avoid creating unrealistic expectations. Employers should develop policies which shift the financial benefits of motoring perks to other areas and discourage commuting by car. The media should balance the glorification of car use with a message of social responsibility.

Local government should take a major role in developing local and regional plans which aim to integrate transport needs with other social, economic and environmental targets. This should be taken into account by the Local Government Commission in plans for structural reorganisation.

The Environment Agency should have a role in the independent assessment and enforcement of transport policy in relation to environmental impacts. The EA could be given responsibility for designing and enforcing a roadside testing programme to meet environmental targets if the police, DOT Inspectors or local authorities cannot undertake the task satisfactorily.

It is the role of the Government to establish consensus on national targets for the transport sector and to develop strategies, planning guidelines, fiscal policy, investment criteria, public awareness campaigns, and other instruments to attain these targets.

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NSCA RESPONSE TO RECOMMENDATIONS IN NOISE THE REVIEW REPORT

Introduction

The Government is continuing to give priority to noise issues in the wake of the 1990 Report of the Noise Review Working Party. In seeking to implement the recommendations of the Working Party, it is considering extending nuisance legislation and amending the *Control of Pollution Act 1974* (COPA) and the *Environmental Protection Act 1990* (EPA). Noise in the street and noise from burglar alarms were identified by the Working Party as important targets for action. It looks as if these current proposals will, if adopted, add significantly to nuisance abatement powers.

NSCA fully supports the extension of the (EPA) 1990 noise nuisance abatement powers to include the "street", as defined in COPA 1974 Noise in Streets provisions.

We support the proposal to give powers to local authority officers to access vehicles or equipment to stop a noise nuisance. In this regard, it should be noted that some authorities are reluctant to use their current powers under EPA 1990 to access buildings and de-activate intruder alarms in case the authority is then held liable for leaving the premises in a less secure condition. The same problem may also arise in respect of vehicle alarms. We therefore recommend that a specific provision be written into the legislation indemnifying officers and local authorities who have exercised their powers reasonably and left vehicles, equipment or premises as secure as is reasonably practicable.

An authority could also be held liable for damages if, for instance, a noisy refrigerated vehicle was 'de-activated' and food consequently damaged. De-activating a generator could also have public safety implications where, for instance, it was providing emergency lighting. Powers to de-activate such equipment would therefore have to be considered separately from intruder alarms.

An important element in the effective control of nuisance from static vehicles will be the power to take action against the registered keepers of vehicles, where those directly responsible for causing the nuisance cannot be found. In this respect we recommend that arrangements for simplifying the procedure for local authority access to the Driver and Vehicle Licensing Centre computer records should be considered.

The paper states that "*. . .the Government's view is that environmental health officers should be able to deal with such functions and that they do not justify the involvement of police resources.*" Whilst we support this view, the implication is that the involvement of local authority resources is justified. The implementation of Part III of

EPA 1990 has made considerable demands on local authority noise specialists and these proposals, however welcome, can only add to this burden. The implementation of such proposals must therefore be matched with adequate resources.

The overlap between EHO and police responsibility is also a factor in the proposal to include noisy demonstrations. We believe that it is not appropriate for local authority officers to be asked to act in a political context, or to deal with large assemblies of people who may be in a state of excitement. The service of abatement notices would also be difficult in this situation. The police have powers to act against those causing obstruction or breach of the peace in such circumstances. The same may be said of noisy gatherings outside pubs, clubs and other places of entertainment; often the majority of noise complaints against such establishments are caused by customers leaving or gathering outside. In these circumstances however we believe that local authority powers *would* be appropriate because a notice could be served on the place of entertainment in respect of nuisance caused outside in the street.

In summary, we recommend that local authorities are given powers over noisy gatherings in the street *only* where this can be enforced by serving a notice on the owner or occupier of the premises responsible for encouraging the gathering.

The consultation paper offers to consider arguments in favour of including other statutory nuisances in the extension of these powers. We would like to consider this question in two stages:

First, there is a straightforward argument for the inclusion of smoke, fumes and gases from stationary vehicles. The Society receives many complaints about vehicles, typically coaches or lorries, which habitually park in a particular location with their engines running, causing local nuisance through smoke or fume emissions. This is directly comparable to noise from parked vehicles, and could be detected and enforced with relative simplicity. We strongly recommend therefore that the statutory nuisances under 79(1)(a) and (b) of EPA 1990 be included alongside noise under the proposals. If it were felt necessary, the exemptions for railway locomotive steam engines under 79(3)(iii) could be replicated for steam-powered road vehicles.

Secondly, there is the more complex question of the enforcement of emission standards and prevention of noise and smoke nuisance from moving vehicles. Even with a strengthened MOT test, there is a need to introduce improved roadside testing for gaseous emissions, smoke and noise, to detect those who contravene the legislation through ignorance or wilful deceit.

Recent technical advances have brought the roadside sensing of smoke and gaseous emissions close to practicability, and the Government has stated that such tests will be extended to include cars and light vans in addition to heavy goods vehicles and public service vehicles. The same cannot be said of roadside noise testing where many vehicles — particularly motorcycles — are subject to deliberate tampering, usually by removing silencer baffles. NSCA has undertaken field trials of motorcycle noise tests and published proposals for an agreed testing methodology, but the official response has been negative.

In our evidence to the Royal Commission on Environmental Pollution's current review of transport, NSCA has emphasised the need to establish a lead authority with overall responsibility for enforcement in this area. In correspondence with NSCA, the Association of Chief Police Officers has shown little enthusiasm for developing a Police role in pollution control. DOT Inspectors carry out HGV roadside tests, but these are relatively limited in number and tend to take place on suitable sites outside urban areas. They therefore fail to target urban pollution, particularly cars and buses. Local authorities have no legal powers, but NSCA's experience with voluntary smoke-spotting programmes suggests that a potential local authority role exists. A fourth option would be to give the proposed Environment Agency responsibility for designing and enforcing a roadside testing programme to meet environmental targets.

Whilst these considerations go beyond the scope of the current proposals, we would emphasise here the need to develop an effective framework for local detection of noise, smoke and gaseous pollution from road vehicles. The extension of local authority control to include nuisance emissions from vehicles in use could be a logical next step from these proposals.

Amendments to COPA Loudspeaker Provisions

We welcome the proposals to give local authorities discretion in allowing the use of loudspeakers in the street. Consideration should be given to making contravention a direct offence, rather than a matter for service of a notice, in some circumstances. Where vehicles are involved, action against the registered keeper will again offer a useful route for enforcement and our comments above on access to the DVLC computer are relevant here. The definition of loudspeaker should be extended to include air horns, sirens, buzzers and other devices capable of emitting sound.

Audible Intruder Alarms on Premises

We welcome the proposals to adopt the general provisions, relating to intruder alarms, of the *London Local Authorities Act 1991.*

As noted above, some local authorities are concerned about their obligation, when entering premises to disable alarms, to leave premises as secure as when they entered. Notwithstanding the argument that an alarm in continuous operation is failing to contribute to the security of a building, we urge that specific indemnity be written into the legislation, as recommended above.

PLANNING POLICY GUIDANCE: PLANNING AND POLLUTION CONTROL

Introduction

The planning system could play a central role in managing local air quality. But a framework to integrate local social, economic and environmental objectives has yet to be developed. This draft planning policy guidance issued by the Department of the Environment in June 1992 looks at the relationship between controls over development under planning law and under pollution control legislation.

General Comments

Over the next few years tightening emission standards for motor vehicles and for polluting processes controlled under the *Environmental Protection Act* will begin to have an impact on air quality in the UK. But improvements in specific sources may be overwhelmed by increasing traffic or new industrial development, and we may expect air quality guidelines to continue to be breached. Where this is the case, additional planning control over the spatial distribution and intensity of these sources may be needed.

There is widespread agreement on the need to integrate environmental, social and economic policy; the planning system is well placed to reconcile the whole range of long term policy aims. NSCA believes that in order to achieve acceptable local air quality, local air quality management plans — involving a partnership between pollution control authorities (PCAs), planners, industry and the public — must be developed to deal with short term problems and long term plans.

One role for planners will be to influence the distribution of polluting sources which individually meet BATNEEC criteria but which collectively may threaten air quality. The current discussion over developments of power stations and incineration plant in the East Thames corridor is just one case in point. Furthermore the indirect pollution effects of development due to its consequential influence on road traffic will increasingly become a matter for planning consideration.

Current DOE guidance indicates that development plans "*provide the primary means of reconciling conflicts between the needs for development, including the provision of infrastructure, and the need to protect the built and natural environment*". Where emission inventories, environmental audits and monitoring programmes identify pollution problems within an area, the development plan can provide a framework for strategic policies to counter such problems. Now the need is to agree indices of improvement and the means by which targets may be achieved. For air quality, health effects and critical loads for ecosystems will be the main policy drivers.

Development plans which incorporate, or take account of, local air quality management plans require two things; agreement on the roles and responsibilities of the key players, and a range of policy options which can be deployed effectively.

On the first requirement, NSCA welcomes the publication of this draft guidance as a helpful delineation of the interface between planning control and PCA functions. However we would look for a more explicit recognition of the potential for planning to

achieve wider environmental objectives, and urge that future guidance should deal with this in detail.

On the second requirement, we welcome the recent clarification by the Secretary of State for the Environment that subsidiarity is the principle that a central authority should perform ". . .*only those tasks which cannot be performed effectively at a more immediate or local level.* . ." Taking into account proposals for the new Environment Agency and the restructuring of local government, we look forward to a constructive debate on those policy instruments which will deliver local environmental quality most effectively. There will be a need to establish the appropriate geographic scale for air quality management based upon emission inventories and ambient air quality monitoring, and technical and administrative arrangements to manage the first in relation to the second.

Local air quality management requires local choice from a national environmental protection "menu" – with some local or regional specialities where appropriate. The application of true subsidiarity would thus allow those concerned with local impacts to deploy a range of effective local policy instruments and techniques.

Copies of NSCA's full response are available from the office at 136 North Street, Brighton BN1 1RG.

PROPOSAL TO REGULATE THE SULPHUR CONTENT OF DOMESTIC SOLID FUEL

A proposal to limit the sulphur content of domestic solid fuel was issued by the Department of the Environment in July 1992. The Society welcomes official recognition of the need to address the petroleum coke issue, as many of NSCA's local authority members have reported the widespread sale of "pet coke" in smoke control areas.

Whilst sulphur emissions from pet coke make only a marginal contribution to long-range acid deposition, local SO_2 hotspots could result where burning is widespread. The vanadium content of pet coke varies widely and is not related to sulphur content; proposals based on a perceived health threat from vanadium would need to be more carefully justified than those in the current document. The Society considers that controls are justified on the basis of a possible threat to local air quality from SO_2, but questions whether the current proposal will achieve the desired aim in the most effective manner.

It is clear that the single intention of the proposal is to prevent the sale of pet coke. No evidence is offered of comparable problems from other domestic solid fuels. However the powers proposed cover the sulphur content of all solid fuels intended for domestic use.

The proposal notes the illegal sale of pet coke in smoke control areas, which suggests that enforcement of current legislation is already a problem for local authorities. Requirements for the determination of a 2% w/w sulphur content by Trading

Standards Officers would add to the burden of enforcement. It is also possible that samples of coal could occasionally exceed the 2% limit.

Given existing resources, therefore, local authorities are unlikely to expand enforcement activities to a level which would make any significant impact on pet coke sales. In seeking to limit the illegal burning of pet coke in smoke control areas and its increasing use elsewhere, the most effective and least cumbersome means would be to impose a ban on the sale of pet coke for domestic use. This would single out pet coke for regulatory attention, but since this is the explicit intention of the proposal, and no other product appears to pose an equivalent problem, a straightforward ban would be the most efficient option.

If, for whatever reason, the Government is intent upon a blanket sulphur content limit on domestic solid fuel, it should be noted that this would be more appropriately determined in relation to the calorific value of the fuel rather than on a weight basis. For uniformity of enforcement, the analytical method for sulphur determination should also be specified.

PROPOSED EUROPEAN COMMISSION DIRECTIVE ON CARBON/ENERGY TAX

Earlier in the year the European Commission published detailed proposals for a carbon tax (see *Clean Air*, Summer 1992). The proposed Directive is currently being examined by an ad hoc group, reporting to the EC Economic and Finance Council (ECOFIN) who are to take the final decision on the issue. In the meantime the Department of Trade and Industry has invited comments on the proposals.

NSCA attaches great importance to the role of efficiency in the production, transformation and use of energy as a key factor in economic development and environmental protection and recognises that fuel and energy choices are exceedingly complex. A realistic strategy for development will require a mix of taxation and other fiscal, command, control and educational measures to be matched to an evolving understanding of the whole spectrum of environmental and economic issues. We recognise that energy policy is an essential part of local, national and international plans for sustainability and for managing constituent issues such as acidification and climate change.

Against this background it would appear that a carbon/energy tax is unlikely to have the sensitivity to achieve the desired end on a pan-European basis. Moreover arbitrary action is likely to produce counterintuitive results, which would lead to delay rather than advance in these important areas. Urgent action is required to clarify the economic and environmental goals so there can be a more appropriate choice of economic and other instruments.

The aim should be to set in train a process of adaptation to a less energy intensive economy. Continuous modification of targets and methods in the light of progress will

be required. Accordingly arrangements for monitoring and feedback will be as important as the starting position. We therefore support the list of points requiring further research contained in the proposals, consultation with members suggesting that it is, if anything, conservative.

NSCA's overall concern about the proposals prevents more detailed comment, but it is intended to develop a comprehensive statement on energy policy, which will address the questions raised in the proposal.

NSCA NEWS

NSCA SCOTTISH DIVISION SEMINAR THE LOCAL AUTHORITY AIR POLLUTION CONTROL SYSTEM

This seminar, held in Edinburgh on 23 June, attracted 120 delegates, who were fairly evenly split between local authority representatives and representatives of industry and other organisations. John Stirling, Deputy Director of Environmental Health, Edinburgh District Council and Vice President of NSCA Scottish Division, introduced the seminar. Four speakers gave presentations on different aspects of the local authority air pollution control system.

Turning the Screw on Air Pollution

Ed Reavley, Assistant Secretary, Scottish Office, Environment Department, explained the background to Part I of the *Environmental Protection Act*, indicating that the proposals arose from the need to implement an EC Directive, and were introduced following extensive consultation.

The essence of the Part I authorisation system is that it demands pro-action, rather than re-action. He pointed out that the system applies the polluter pays principle in a radical way. In addition to the actual compliance costs of upgrading plant and equipment, industry will have to meet the regulatory cost of implementing and enforcing the new controls under a formal charging scheme. Although the charges are currently levied on a per process basis, alternative formulae can be used for cost recovery charging in the future.

He said that the Local Authority Unit has performed a very worthwhile job in drafting a large number of process guidance notes and defining BATNEEC for a large number of industries in a short timescale. These notes had been subject to extensive consultation.

The presentation was concluded with details of the responses made to the consultation paper proposing to establish a Scottish Environment Protection Agency (SEPA). He explained that with regard to air pollution control the majority of industry and other groups are in favour of these functions being transferred to the SEPA, while the vast majority of district councils in Scotland are against such a transfer of functions. The

advantages of such a transfer include integration of air pollution control and provision of a one-door approach for industry. However, he also said that there had been a significant expression of concern with the proposals in relation to lack of local accountability and accessibility. He explained that ministers are expected to make a decision in principle on the SEPA in the near future. Mr Reavley also indicated that the NSCA Scottish Division response to the consultation paper on the proposed SEPA has been regarded as giving a "well argued" case.

The Local Authority Air Pollution Control System

Crawford Morgan, (Principal Environmental Health Officer, City of Glasgow District Council) highlighted the main features of the local authority air pollution control system, before going on to consider the various regulations and the one order which had been made under Part I of the *Environmental Protection Act.* He explained the BATNEEC principle, which is fundamental to the system.

The requirement for advertisement of applications along with the need to consult the statutory consultees was discussed. The matters which enforcing authorities must consider in coming to a decision on applications was explained, along with the need to compile and maintain registers. The information required on the register was then examined, along with access requirements for the public.

The speaker indicated that authorisations must contain specific conditions which should be able to meet the tests of enforceability, clarity for industry and the public, relevance to air pollution control and to the process in question and workability. Variation notice procedures were also considered along with local authority powers to issue enforcement, prohibition and revocation notices. Mr Morgan explained the training which had taken place for local authority enforcement staff in Scotland, the proposed circulation of information bulletins and the recent establishment of eight Local Liaison Groups and a Scottish Pollution Control Co-ordinating Committee. He felt that these measures should help to maximise the co-ordination of enforcement activity throughout Scotland.

The proposal to establish the Scottish Environment Protection Agency was briefly mentioned, the speaker arguing that the case for SEPA in its proposed form did not appear to have been made. In particular, he highlighted the fact that the proposal to establish the Environment Agency in England and Wales intended to leave the existing local authority air pollution control functions with the local authorities, whereas the Scottish Office proposed the transfer of these functions to the SEPA. He felt that this was an anomaly.

Finally, the current position with regard to the local authority air pollution control system in Glasgow was explained. Additional staff had been employed and the Department of Environmental Health was taking a pro-active approach in identifying processes, 161 of which had been identified as likely to require authorisation. However, despite personal visits to all premises and the issue of a general guidance booklet and application form, of the 52 applications which should be made before 31 July 1992, only 3 had been received up to 23 June, along with 1 application for a waste oil burner.

It was anticipated that reports would be submitted to the Procurator Fiscal in due

course with regard to process operators who made no attempt to submit a valid application, or where the delay in making such an application was unreasonably beyond the due date. However, he concluded by indicating that he hoped that this course of action could be avoided as far as possible, since improvements in air quality adjacent to prescribed processes could be best achieved by close co-operation between the Local Authority and the operators of the processes concerned.

Upgrading your Process: Getting the Timing Right

Alexander Peckham, Director of the Centre for Environment and Business in Scotland, explained the information required from operators of prescribed processes in making application to local authorities for authorisations, along with the timetable for implementation of Part I of the *Environmental Protection Act* in Scotland.

He indicated that information would be sought by regulators regarding the operator, the location of the process, a description of the prescribed process, prescribed substances, emission control techniques, environmental impact assessment on releases, proposals for monitoring, action toward BATNEEC and additional information. It was explained that applications for the first block of processes should be made to local authorities between 1 April 1992 and 31 July 1992. Thereafter second block applications should be made between 1 August, 1992 and 30 November 1992, with third block applications being made between 1 December 1992 and 31 March 1993. Local authorities then have nine months to come to a decision in connection with the existing process applications.

This speaker urged local authorities to identify their processes requiring authorisation and industry to approach the regulators at an early date, in order to seek advice on the extent of information required in applications. He concluded by setting out the information which his organisation could provide to industry with regard to the local authority air pollution control system.

Monitoring and Measurement: Practical Aspects

Nick Hedges, Senior Consultant, March Consultancy Group, set out the services offered by his company's Environmental Division which are directed especially towards manufacturing industry. His presentation addressed the practical monitoring issues raised by the *Environmental Protection Act.*

He explained that guidance on monitoring requirements was contained within the Process Guidance Notes, along with details of emission concentration limits. He went on to explain the hazards posed by particulates and volatile organic compounds (VOCs) and described some of the methods available for measuring stack pollutants, in particular particulate matter and VOCs.

The presentation was concluded with an outline of case studies of his company's experiences in foundries, aluminium can manufacturers, and particle board and adhesive tape factories, which illustrated the monitoring techniques and control technologies he had discussed earlier.

The presentations were followed by a lively discussion session chaired by Calum MacDonald, Pollution Control Manager with Glasgow District Council.

SOUTH WEST DIVISION

The South West Division has been busy during the summer period and held two meetings of Divisional Council, followed by a visit of the Division to an industrial venue to review environmental control policies and practices.

The first meeting was hosted by Plymouth City Council whose Lord Mayor, Councillor R Simmonds, kindly arranged a formal reception for the Division prior to a visit to the Naval Base Refit Complex at Devonport. The meeting was pleased to receive Dr T Crossett, Secretary General, who emphasised the importance of partnership between industry, local authorities and the Society in improving and sustaining environmental quality. The visit to the dockyard included a tour of both the frigate and submarine refit complex. It was preceded by a series of comprehensive presentations on dockyard pollution control policies and the environmental protection measures associated with a nuclear base.

The second meeting and visit was hosted by Esso Petroleum Company Ltd at Avonmouth, Bristol, concentrating on the issue of vapour recovery, but also considering the general environmental policies being adopted by the petroleum industry.

It was reassuring and encouraging to hear from both sectors of industry that a positive green agenda had been adopted addressing a range of issues as diverse as procurement, waste minimisation, monitoring and improved pollution control systems.

SOUTH EAST DIVISION

The 37th AGM of the South East Division was held on Tuesday 23 June at the Head Office of British Coal in London. The following members were re-elected: Mr P Cooney, Chairman, Mr F J Smith, Deputy Chairman, Mr J J Beagle, Honorary Secretary and Mr B Nagle, Honorary Auditor. It was resolved to recommend that Mrs Pat Naylor be made an Honorary Member of the Society in recognition of her long and loyal service. The death of divisional member Mr David Corfield was reported with deep sadness and the Society was represented by Mr J J Beagle at the funeral.

The Division plans to hold a one day seminar on Waste, Water and the Environment, on Tuesday 1 December at the Institute of Child Health, London. Lord Lewis of Newnham, former chairman of the Royal Commission on Environmental Pollution, will give the keynote address. This will be the first time the Society has broached the subject of the interaction between contaminated land and water pollution.

Climate Change — The Present Position

Following the AGM, Professor R S Scorer gave an interesting talk. He outlined the natural phenomena contributing to the world's climate and looked at changes in the earth's temperature over the centuries. It was established that recent increases in temperature are probably largely due to natural periodical change in radiation, with only a small contribution from fossil fuel consumption. He also assessed the causes and effects of stratospheric ozone depletion and concluded that on present evidence this would not contribute unduly to an increase in global temperature.

Eurotunnel Visit

On Tuesday 21 July the division visited The Eurotunnel Exhibition, Folkestone. Working models, computerised videos and films showing the construction and the operation of the tunnel made for an interesting day out. *(Report from Joseph Beagle)*

NOISE AWARENESS MONTH

August 1992 was Noise Awareness Month. NSCA co-operated with IEHO and the Right to Peace and Quiet Campaign (RPQC) to raise awareness of noise nuisance and tackle some of the problems. Radio stations were a particular target, and representations of all three organisations participated in interviews on local radio across the country.

NSCA wrote to radio station managers asking them to remind listeners about outdoor noise during the summer. Most were responsive, and the RPQC awarded prizes to three radio stations who promoted the "turn it down" message. The prizes were presented by Environment Minister Lord Strathclyde, who welcomed the initiative taken by the three organisations.

The Minister and Val Gibson of RPQC are serenaded by Bobby McVay of Radio Wyvern, who wrote a special "Keep your radio low" song for the campaign.

HONORARY TREASURER

Brian Edwick, who has served the Society as its Honorary Treasurer since 1980, has informed the Council of the Society with regret that he will not be able to accept nomination for election at the Annual General Meeting in October 1993. The Council is therefore seeking expressions of interest from those who might be willing to accept nomination.

The ideal candidate would have experience of financial control and management, preferably obtained in a small business. The day to day financial business of the Society is handled by the staff of the Brighton Office. The role of the Honorary Treasurer is to recommend financial policies and strategies to the Council after discussion in the Finance and Administration Committee and to ensure that these policies and strategies are implemented to standards which meet his or her requirements and those of the auditors. In practice Brian has found that this means frequent contact with the office by telephone, attendance at Council and Committee meetings and spending one day per quarter in Brighton. He has also been able to countersign significant cheques and orders as necessary.

The Council hopes that the Treasurer will continue to serve in an honorary capacity, but travelling and other out of pocket expenses will be reimbursed.

The Secretary General, Tom Crossett, would be happy to discuss the role and duties of the Honorary Treasurer with members who are interested. Please write to him or telephone him at the Brighton office (0273 26313).

REPORTS

ODOUR AT THE PROCESS BOUNDARY

MS Pratt
Industrial Environment Director
Cremer and Warner
This paper was presented at NSCA's Training Seminar, June 1992.

Introduction

The *Environmental Protection Act 1990* (EPA) aims to maintain and/or improve environmental quality by, amongst other things, controlling a number of industrial and combustion processes that have not hitherto been controlled by statute. Many of the processes now subject to control were either exempt from regulation or could only be controlled after nuisance had been caused. Control of noise, dust and odour nuisance could be effected through, for example the, *Control of Pollution Act* 1974, or the *Public Health Act 1936* (PHA) (and subsequent legislation); but the standard of evidence required to make a successful prosecution was often difficult to obtain and the definition of nuisance difficult to determine. In many cases the definition of nuisance was a matter of legal interpretation in the context of case law.

Prior to the enactment of the EPA, the definition of nuisance was generally accepted to mean "loss of enjoyment of property" although the test of "enjoyment" seemed to vary with the neighbourhood in which the "property" was situated. Moreover, in the PHA it would also be possible to take action against a polluter if the emission was seen as "prejudicial to health". The great difficulty with these terms is that neither were subject to clear and unambiguous definition that would allow prosecution except in the most serious cases.

The nuisance sections (91 to 100) of the PHA have now been replaced by the EPA (Part III; sections 79 to 82) and in addition the environmental health officer has been given powers to regulate, and police through an annual authorisation, all those "Part B" processes detailed in Part 1 of the EPA. This extended control may however be double edged because where an authorisation has been issued for a Part B process, an action for nuisance cannot (as I understand it) be taken through Sections 79 to 82 without the approval of the Secretary of State. Assuming this is correct then the issue of an authorisation for a Part B process with the potential for creating odour (or other) nuisance becomes of critical importance. Before leaving the subject of law it will be instructive to review the definition within the EPA insofar as they might affect odour (and nuisance). The key part of the definition is ". . .to minimise and render harmless" where harm, in the case of man, is taken to mean offence to any of his senses or harm to his property. It will be interesting to see this definition tested in the courts and to observe whether it assists in the collection of prosecution evidence. From a technical point of view (in my

opinion) the definition appears to be more stringent, but in practice it still lacks any form of quantification, eg

— how many valid complaints constitute an offence.

— how many people need to complain before enforcement action should be taken.

— if one person complains ten times, is that equivalent to ten people complaining once, etc

In the Secretary of State's Guidance Series (1991) "offence to his senses" (in the context of odour) seems to be defined in terms of "The aim should be that all emissions are free from offensive odour outside the process boundary, as perceived by the local authority inspector". There appears however, to be no definition of "offensive" in the guidance note (GG4(91) April 1991) dealing with the interpretation of terms. Given these uncertainties, and the changes within the law, are we better equipped to measure and/or control odours?

Odour Measurement

The 'nose' remains the only reliable detector of what smells and what does not. Similarly the nose working in conjunction with the brain (often involving memory) tells us what is pleasant and what is unpleasant or even objectionable. The 'nose/brain' combination is also able to become partially anosmic to odours that are continuous so that they are ignored. There have been attempts to understand how odours are detected within the olfactory cleft, and there has been research into the production of "artificial noses" but with little success.

The only satisfactory method to quantify the strength of an odorous gas is to determine the number of dilutions required to render it odour-free. The establishment of odour thresholds in this way has been undertaken using a variety of techniques for many years. This research has led to a range of odour thresholds for a given chemical because of differences in chemical source and purity, in odour dilution techniques, odour panel selection and/or screening and definition of the odour threshold. Odour thresholds are commonly referred to as:

(i) absolute — dilution at which none of the panellists can detect the odour.

(ii) 50% detection — dilution at which half the panellists can detect the odour.

(iii) 50% recognition — dilution at which half the panellists can recognise the odour.

(iv) 100% recognition — dilution at which all panellists can recognise the odour.

The 50% recognition threshold is most commonly referred to as the odour threshold. An illustration of the variability of some odour thresholds from three sources is given in Table 1. When a process odour can be attributed to a single, identifiable compound such as acetic acid, toluene or methyl merceptan, then the odour threshold can be extremely useful in the examination of the potential for odour nuisance.

Where odours are due to mixed sources, and unidentifiable compounds are involved, the only way an odour threshold can be determined is to establish the number of dilutions required to render the process emission odourless. This can be achieved

using a suitable dilution technique (eg ASTM syringe; continuous dilution, odour room) and an organoleptic panel. An organoleptic (or odour) panel typically comprises six people. Selection of panellists is often achieved on the basis of a simple triad test involving sets of odorant samples (two identical; one blank) of varying concentration. The results of individual trial panellists (typically 10) are then ranked, rejecting those with high and low sensitivities to the odorant. This procedure produces an 'average' panel of six members. The panellists are then individually or in groups subjected to the varying concentrations (including blanks) of the odorous material whose threshold is being determined. The responses from the panellists are then analysed on logarithmic probability graph paper to determine the 50% detection (or recognition) threshold. In many cases there is little difference between 50% detection and 50% recognition thresholds.

In practice it must be realised that the determination of odour thresholds is extremely difficult for a number of reasons including:

— psychology and objectivity of testing
— selection of panellists
— presentation of the same concentration of odorant
— collection of odorous gas in the field for laboratory testing

In practice the problem of odour detection in the field is not simply a matter of concentration, though this can be important, but of persistence and offensiveness. The use of odour panels as described above can be employed in the field but they can be cumbersome and expensive. An alternative technique involves the use of trained individuals who can characterise an odour on a numerical scale (usually 1-5) consistently, both between each other and on different days. This procedure is expensive to set up due to the selection and training programme but is flexible for use in the field.

The most common approach to measure the frequency of detection of off-site odours is to employ the use of "diaries" kept by members of the public. Hopefully, those selected for this task report their observations accurately, but there is always a risk that diary keepers will be prejudiced and show bias in their reporting. This procedure has often been used to support prosecution but the evidence of diary keepers has not always been robust under cross-examination. The guidance notes (eg PG6/3 (91) February 1991) on specific processes require "olfactory assessment of emissions" to be made frequently and at least once per day. In guidance note GG4, some indication is given on who should carry out these tests, and some of the factors to be taken into account in selecting personnel. However there appears to be no information on how people should be trained, where the assessments should be carried out etc. If these assessments are to provide useful data it will be necessary (in my opinion) to define as a minimum:

— where the assessments are carried out
— who carries out the assessment
— what data are to be reported
— what training is to be given

Odour Control

Measurement of odour and the determination of 'nuisance' or 'harm' will always be problematical and therefore it must be in the interest of all parties to prevent (or minimise) the production of odours at source: this however can be expensive. In many cases it must also be recognised that the complete elimination of odours is not technically feasible at any cost. In any process there are two main sources of odours that need to be examined and if possible abated, namely:

— process emissions due to chemical reactions or the transfer of odorous materials from one vessel to another.

— fugitive emissions due to process leakages, cleaning of empty containers and spillage.

Of these two sources, it is the fugitive category that generally causes most boundary odours, and can often be controlled at little cost to the site operator.

Before looking at odour control techniques, it is worth remembering that using substitute, non-odorous or less odorous process materials can often eliminate the need for odour control equipment. In other cases, determination of why the odorous emission is produced could well indicate how process changes (eg temperature, material addition sequences) could result in its elimination. All operators should be encouraged to carry out an engineering process review to eliminate the production of odorous emissions before consideration is given to odour abatement. Consideration must also be given to the containment of odours within buildings and process equipment. Containment can prevent the dispersion of odours and confinement within process equipment and/or extraction equipment can significantly reduce the cost of odour abatement equipment.

In general terms odour abatement can be achieved using a number of techniques such as:

— chemical absorption

— chemical adsorption

— condensation

— incineration — thermal
— catalytic

— micro-biological degradation

Manufacturers often make claims regarding the effectiveness of their equipment far beyond the actual performance that can be guaranteed. Claims regarding high removal efficiencies are made based on odour threshold/dilution measurements before and after the control device is used. These claims can be valid but is the residual 2, 3 or 5% emission still going to give rise to odour nuisance?

Adsorption systems such as activated carbon can have high removal efficiencies but how will break through (ie exhaustion of the carbon bed) be detected? In the calculation of the life of the adsorption bed was the water content of the gas stream taken into

account? Short bed life and early break through could well result in a recurrence of odour complaints.

Condensation (chilled water, glycol and cryogenic) systems can be extremely effective at solvent collection, and in some cases the solvent can be re-used or recycled. The cost of this equipment however can be high and is often similar to that of incineration. The efficiency of the condensation system is a function of the operating temperature, the vapour pressure of the odorant and the residence time in the equipment. If the odorant is non-condensible under the operating conditions the system can be ineffective.

Incineration is the only odour abatement system that will destroy (oxidise) all odorous gases. Catalytic systems operate at lower temperatures and hence tend to be more fuel efficient but catalysts can be poisoned and replacement costs are high. Thermal incineration is less fuel efficient but is not subject to deterioration due to poisoning. Incineration, when combined with heat recovery can be a cost effective way to destroy odours provided the system is properly sized and engineered. There must also be a constant need for the waste heat (steam, hot water and in some cases electricity).

Micro-biological degradation of odorous air can be effected in peat beds, a relatively new system that is being used increasingly in some industries. The design basis for the peat bed is to a large extent empirical, and although economic to install and operate they occupy a significant land area. The space requirement of peat beds often prevent their consideration on small sites.

Which ever system is adopted, care must be taken in the selection of equipment, sizing, installation and commissioning. If this is not done new environmental problems can be introduced as illustrated later in this paper. For the abatement systems to work reliably they must be well maintained and the extraction system properly balanced to ensure capture of all odour emissions. In many odour control systems, the designer will endeavour to capture all high concentration, low volume odours at the point of production for subsequent incineration, leaving general building air with low odour potential but high volume to be extracted by chemical scrubbing or micro-biological degradation. Effective control of odours within the general building atmosphere can only be achieved if the building fabric is in good condition. At many sites, considerable attention is given to the control of process odour but little consideration is given to housekeeping, storage of odorous materials, removal of wastes etc. Such activity is just as important as the abatement of the process odours. If there are low standards of housekeeping the odour potential at the boundary may not be improved by the installation of expensive odour abatement equipment.

It must be recognised that the installation of odour abatement equipment is expensive and in most cases will not provide any economic return for the company. There are, of course, exceptions to this, eg incineration (heat recovery) and some cryogenic systems (solvent recovery) but the returns tend to have long time scales and the high capital investment required to install the equipment can often be seen as damaging to the business in the short term.

Atmospheric Dispersion

The use of atmospheric dispersion to dilute odours below their odour thresholds

should never be seen as a means of positive odour abatement. At best it can be used to dilute the residual odours from an abatement system. It has to be said however that many believe that increasing the height of a discharge or the efflux velocity of the emission will prevent the detection of odours.

The rate of dilution of a gas in the atmosphere is dependent on its mass, the effective height of discharge (physical stack or vent height plus any thermal buoyancy or momentum due to the exit gas velocity), wind speed and atmospheric turbulence. It is possible to use general atmospheric dispersion theory to examine the likelihood of the detection of odours at a given location, but very considerable caution must be taken in the interpretation of the results produced. Following some extensive research in the 1970s Warren Spring Laboratory (1980) examined, on behalf of the Department of the Environment, possible correlations between odour detection, odour thresholds and nuisance. In this work they developed some simple equations for the examination of stack heights to minimise odour nuisance and distance at which complaints were likely to occur. Without reproducing all the details here, the key equations are as follows:

(1) Effective height $(H_e) = (0.1\ DF)^{0.5}$

Where: D = number of dilutions to detection threshold at the chimney exit

F = volumetric flow rate (m^3/s) at standard conditions

E = odour emission rate (m^3/s)

For a material with a known odour threshold D, may be replaced by:

X/X_o where X ($\mu g/m^3$) is the concentration of odorous substance at the chimney exit and X_o ($\mu g/m^3$) is the 50% odour detection threshold.

The effective chimney height (H_e) then has two components, the physical stack height (H_e) and the plume rise (ΔH)

(2) $H_e = H_s + \Delta H$

The evaluation of ΔH is based on either the momentum or thermal buoyancy and is given by the following:

(a) Momentum

(3) $\Delta H = 3Wd/U$

Where: W(m/s) = velocity of the gases at the chimney exit
U(m/s) = wind speed at the top of the chimney (H_s)
d(m) = internal diameter of the chimney

To apply this equation W/U must be greater than or equal to 4. When W/U is less than 1.5 down wash may well occur.

(b) Thermal Buoyancy

(4) $\Delta H = 20.5\ Q_h{}^{0.6} H_s{}^{0.4}/U$

Where: Q_h(MW) = emission of sensible heat
H_s(m) = chimney height
U(m/s) = wind speed at height H_s

The emission of sensible heat can be evaluated from the equation:

(5) $Q_h = pVC_p (T\text{-}Ta). 10^{-6}$

Where: $p(kg/m^3)$ = density of stack gases
$V(m^3/S)$ = volumetric flow rate
$T(K)$ = stack gas temperature
$C_p(J/kg/K)$ = specific heat of the stack gas at constant pressure
$T_a(K)$ = mean ambient temperature

Equation (1) may be used to calculate the effective height of emission, under average UK meteorological conditions, required to reduce the ground level concentration below a "nuisance" criterion which is defined as five times the 50% detection threshold and the maximum concentration detected in any 3-minute period is ten times the 3-minute average concentration. Clearly there remains some uncertainty in the results calculated using such a simple generalised equation and to examine this the effective height is often determined in the range of $(0.05E)^{0.5}$ to $(0.15E)^{0.5}$.

The maximum distance (dmax) from an odour source that complaints might be expected may also be approximated by a similar equation, namely:

$$dmax = (2.2DF)^{0.6} = (2.2E)^{0.6}$$

Where D, F and E have the same definitions as given above. The uncertainty range may again be examined by the evaluation of $(0.7E)^{0.6}$ to $(7E)^{0.6}$. The empirical data used to derive the expressions dictate that the source of odour must be at ground level or the receptors far enough away that the source can be considered to be at ground level. For this to be achieved the value of dmax should be at least 40 times H_e.

It is perhaps interesting to note that equation (1) is referred to in a number of process guidance notes (eg PG 6/7(91) July 1991). Unfortunately there is not enough information presented in the notes to allow anyone to use the equation and there is no reference to the original source. The Warren Spring publication detailed at the end of this paper is (I believe) the original source although some of the equations have been reproduced elsewhere. The guidance notes also appear to place greater reliance on the results of the calculations than might be appropriate: caution should certainly be applied to the results obtained.

Commercially Available Dispersion Models

It has become common practice to examine offsite odour detection using computerised atmospheric dispersion models. These are certainly more sophisticated than the simple equations used above. It must be remembered however, that the above equations have been derived from the same basic theory, but then modified on the basis of empirical data.

If dispersion models are used it must be remembered that most use an atmospheric turbulence averaging time of between 10 minutes and one hour and hence the concentration averages relate to the same time base. For odour detection, the averaging time for the nose is probably less than one second. To facilitate the use of the computer models the results produced must be adjusted to provide a reduction of the averaging period. An approach to this could well be as follows:

(a) Assumed nuisance threshold = 5 times 50% recognition threshold.

(b) Conversion of averaging time 1 hour to 3-minutes multiply by 1.64.

(c) Conversion of average 3-minute mean concentration to peak concentrations (1 second duration) multiply by 10.

Using this approach, if the 50% recognition threshold was say 10 $\mu g/m^3$ nuisance complaints might be expected to occur at concentrations around 50 $\mu g/m^3$. The hourly average concentration estimated by the dispersion model would be multiplied by 16.4 and the resulting concentration compared with 50 $\mu g/m^3$ (or 10 $\mu g/m^3$) depending on the rational of the assessment. If concentrations greater than 50 $\mu g/m^3$ were estimated using this approach, then given all the uncertainty in modelling, complaints would have to be seen as a real possibility; the higher the value the greater the potential for complaint. Conversely the lower the concentration the less likely complaint becomes but the possibility for odour detection will remain under unfavourable conditions.

Models can be used to estimate down wind concentrations of materials from point (ground or elevated), line and area sources. Such models, while initially very attractive, all have to be used with great care. The main difficulties that can arise in their use relate to:

— determining the source term

— averaging times

— interference from near field structures

Models can be useful, if carefully applied, but should not be used without great caution.

Case Study

A company carrying out a solvent coating process objected to planning permission being granted for a new housing development near its property. The company, and the local authority, was aware of occasional odours from the site but it was agreed that odour control was not feasible and discharge of solvent vapours to atmosphere was the best practicable means (BPM). The local authority did not consider a nuisance to exist and no enforcement action was taken. The local authority refused planning permission. The developer appealed and the appeal was successful.

The houses were built and odour complaints were made to the company and the local authority. The local authority did not take action as in their opinion nuisance did not occur. The company, however, concerned about its public image took advice on what could be done. All sources approached agreed that discharge to atmosphere remained BPM. It was suggested that if the efflux velocity was increased, dispersion would be improved and the likelihood of complaint reduced. A new fan was selected and installed. The number of odour complaints reduced marginally but now there were also noise complaints. Noise attenuation around the fan was installed and the stack height was increased by 5 metres. At the time all this was occurring, the company was concerned about its energy usage, so it decided to install a heat exchanger in the exhaust gas duct to recover some waste heat by preheating the air going into the drier. The net effect of all these changes were, broadly, to leave the level of noise and odour com-

plaints about the same. By this time the local authority had decided that the noise levels from the site did constitute a nuisance and took action under the *Control of Pollution Act 1974* (S58). At the same time a private individual took action under the *Public Health Act* 1936 (S99).

The company acted with the best intention throughout this period taking advice from those it believed to be 'expert'. Examination of what happened in practice however is useful.

1. **In any remedial work programme it is essential to consider all aspects of the problem.**
   Nothing is achieved, if one problem is simply replaced by another.

2. **Was increasing the efflux velocity going to achieve the original objective?**
   Consider equation (1).

   $H_e = (0.1DF)^{0.5} = (0.1E)^{0.5}$

The company was using a mixed solvent so no odour threshold data were available and therefore 'D' was unknown. The efflux velocity was measured at 10 m/s and was increased to 15 m/s by the introduction of the fan. The stack diameter was 0.3 m.

Assume D = 10,000, then $F = \pi(0.15)^2 \times 10 = 0.71$ m^2/s

and $H_e = (0.1 \times 10{,}000 \times 0.71)^{0.5} = 26.65$ m

Now if the volumetric flow rate (F) is increased, the dilution D must fall. For the purpose of calculation assume the 50% recognition odour threshold is 10 μg/m^3 and then the original concentration of odorant can be derived from:

$D = X/X_o$

$10{,}000 = X/10$

Therefore X = 100,000 μg/m^3

and the mass emission becomes

$Q = XF = 100{,}000 \times 0.71 = 71{,}000$ μg/s.

For this situation, Q remains constant but the volumetric flow F is increased by the new fan. Ignoring any pressure losses in the system, the new value of F is given by:

$F = \pi(0.15)^2 \times 15 = 1.06$ m^3/s

then the odorant concentration becomes:

$X = Q/F = 66{,}981$ μg/m^3

and $D = 66981/10 = 6698.1$

Substituting the new values of D and F in equation (1) gives:

$H_e = (0.1 \times 6698.1 \times 1.06) = 26.65$ m

The effective height (H_e) of the emission is unchanged and therefore there is no benefit in increasing the efflux velocity and the disbenefits included:

— cost of equipment and installation
— cost of running the new fan
— introduction of a noise nuisance
— cost of noise attenuation

Recommendation

Remove the fan as it serves no useful purpose. Had this type of analysis been undertaken before installation of the fan these disbenefits would have been manifest.

3. **What benefit was gained by increasing the stack by 5 m and installing the heat exchanger?**

Continuing to use the data given above, ie solvent emission rate of 71,000 µg/s (or 0.26 kg/h) and an emission temperature of 150°C with a stack height of 15 m. Then change in ground level concentration using a typical dispersion model would be as given in Table 2 (column 2). If the stack height was increased to 20 m then the change in concentration using the same model, keeping all other parameters fixed would be as given Table 2 (column 3).

From Table 2 two observations are evident. Increasing the physical stack height has decreased the ground level concentration, in this case by about 44% but it has increased the distance to the maximum concentration by 50 m. This reduction might be seen as adequate when the model results are compared with the odour threshold (assumed above to be 10 $\mu g/m^3$). As noted earlier such comparison would be inappropriate because no consideration has been given to the averaging time in the model. When the concentrations are adjusted for the averaging times (1 hour to 3-minutes) and then for peak concentrations in any 3-minute mean, the estimated ground level concentrations are in the region of 75 $\mu g/m^3$; some seven times the odour threshold.

The impact of removing heat from the exhaust gases is shwon in Table 3; as the emission temperature falls the ground level concentration rises, and the distance to the maximum concentration decreases. Here again when averaging time is taken into account for the 50°C emission temperature example the estimated ground level concentration is nearly nine times the odour threshold.

Recommendation

Remove the heat exchanger as it was inhibiting atmospheric dispersion. Fine particulates in the heat exchanger were also causing tubes to block thereby resulting in book pressures in the process equipment which in turn caused solvent vapours to leak into the work space. This was unacceptable from an occupational hygiene point of view and therefore removal of the heat exchanger was essential.

4. **Could nuisance be avoided from the process?**

The calculation of effective stack height (H_e) in equation (1) indicated that a height of 27 m was required to "eliminate" nuisance. The plume rise calculated from the model at 150°C (5 m/s; D stability) was about 3 m. The effective height in this condition, with a stack height of 20 m, was 23 m. The additional 4 m required could be obtained by increasing the temperature of the emission by about 100°C, but more realistically would

be achieved by increasing the stack height.

The original form of equation however gave an uncertainty range of $(0.5E)^{0.5}$ to $(0.15E)^{0.5}$. If the above data are used to calculate the effective stack height range then values between 18.84 m to 32.63 m are obtained. In this situation even using a 24 m stack with 3 m of plume rise will not ensure nuisance never occurs.

The only way to ensure nuisance never occurs is to (a) remove the odorous solvent or (b) incinerate the solvent and use the waste heat in the solvent drying process. Wherever possible option (a) has to be preferred.

Conclusions

From the above it is evident that controlling odorous emission from Part B processes will remain problematical not only because of the costs involved but also because of the subjectivity in their assessment. The EPA does however provide control over many processes not previously subject to any regulation other than retrospective nuisance legislation.

In theory, at least, the local authority should be able to exercise significant control over a range of industries with a reputation to cause odour nuisance. The success of these new powers will depend upon the resources made available at both the authorisation stage and thereafter for ensuing compliance. It will also be essential for local authorities to share their experiences in the implementation of the regulations with both neighbouring authorities and central government, to ensure standards are applied consistently and the guidance notes keep pace with changes of technology.

Acknowledgement

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Chemical	(1)	(2)	(3)		
			Absolute	50% Recognition	100% Recognition
Acetaldehyde	0.21	0.05	0.03	0.6	0.6
Acetone	100	13	20	32.5	149
Ammonia	46.8	5.2			
Benzene	4.68	12			
Chlorine	0.31	0.31			
Ethyl acrylate	0.00047	0.0012	0.0002	0.0003	0.00036
Formaldehyde	1.0	0.83			
Hexane		130			
Hydrogen sulphide	0.00047	0.0081			
Methyl ethyl ketone	0.47	5.4	2.0	5.5	6.0
Methyl mercaptan	0.0021	0.0016			
Phenol	0.047	0.04			
Styrene	0.47	0.32	0.05	0.15	0.15
Sulphur dioxide	0.47	1.1			
Toluene	2.14	2.9	0.17	1.74	1.74
Trimethylamine	0.00021	0.00044			

(1) Leonardos 1969; (2) Jones (editor) 1992; (3) Hellman (1974)

Table 1
Odour Threshold Concentrations (ppm)

Distance (m)	Ground Level Concentration ($\mu g/m^3$)	
	15 m	20 m
25	0	0
75	0.62	0.02
125	6.21	1.47
175	8.30	3.57
225	7.99	4.50
275	7.01	4.59
325	6.00	4.30
375	5.12	3.90
425	4.40	3.49
475	3.80	3.11

Table 2
Change in ground level concentration with distance and stack height (neutral atmospheric stability; 5 m/s wind speed)

Distance (m)	Ground Level Concentration ($\mu g/m^3$)		
	50°C	100°C	150°C
25	0	0	0
75	0.05	0.02	0.02
125	2.26	1.73	1.47
175	4.58	3.92	3.57
225	5.33	4.80	4.50
275	5.20	4.81	4.95
325	4.74	4.46	4.30
375	4.22	4.02	3.90
425	3.73	3.58	3.49
475	3.30	3.18	3.11

Table 3
Change in ground level concentration with distance and emission temperature (neutral atmospheric stability; 5 m/s wind speed)

REDUCING SO_2 EMISSIONS — THE SHORT TERM ANSWERS TO A LONG TERM PROBLEM

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Introduction

In 1988 the UK adopted the EC Large Combustion Plants Directive (LCPD), and thus agreed to a three stage reduction in SO_2 emissions from existing plants of 20% by 1993, 40% by 1998 and 60% by 2003, relative to 1980 levels. The adoption of the LCPD was significant because for the first time in the UK a progressive policy of emissions reduction was to be implemented and specific emission limits were to be imposed on new plants.

Responsibility for dividing the total reductions required, between the three main sources of emissions in the UK, that is power plants, industry and refineries, lay with the Department of the Environment (DoE) (Table 1). The means by which each of these sectors would meet their allocated reductions was to be determined by the sectors themselves.

On 31 March 1990 the electricity supply industry in England and Wales was officially privatised. Consequently the former Central Electricity Generating Board (CEGB) has now been dissolved and its assets divided between a number of separate generating, transmission and distribution companies. Generating capacity has been allocated to two separate companies, National Power and PowerGen which have received a roughly 60:40 share of generating capacity respectively. The only power plants which remain in public ownership are the nuclear plants, now operated by Nuclear Electric[1]. In contrast to the old system, the generators are no longer under any obligation to supply electricity, their main concern is to operate as a profitable commercial concern. This change in focus has had a major impact on the approach taken by the generating companies to comply with the LCPD, resulting in the adoption of short term options in response to a long term problem.

The Privatised Electricity Industry

Privatisation has broken up the monopoly held by the CEGB and introduced a competitive element by offering independent generators the chance to sell electricity to the National Grid[2]. All generating companies must bid daily to supply electricity to National Grid, quoting a certain price for each power station. Those bids which are the lowest are selected to supply power the following day[3]. In theory this arrangement should result in a more efficient electricity system, and keep costs to the consumer to a minimum[4]. However, by switching the emphasis of the industry from supplying electricity in order to meet demand, to generating a profit, privatisation is likely to have significant and long lasting negative effects, particularly with regard to the environment, but also in relation to long term economic stability.

The main way in which electricity generating companies can make a profit is by selling electricity, therefore it stands to reason they will attempt to sell as much as possible. This however is in direct contrast to the promotion of energy efficiency and conservation called for by environmentalists the world over. For energy conservation represents a key method of controlling pollutants which contribute to problems such as acidification and global climate change[5]. In addition to its environmental benefits energy conservation also offers industry a means of reducing its costs, but without its promotion much of industry will remain uninformed and the benefits will be missed. Therefore, although energy conservation has been severely neglected prior to privatisation, its prospects look even more bleak for the future.

In order to maximise profits the electricity generating companies must now aim to keep their costs as low as possible. As a consequence generators are even more reluctant to invest in environmental protection measures, which have always been low on the agenda in the past, and they are likely to do so only if forced to by legislation. Consequently, for any environmental protection measures which are adopted, the cheapest options are likely to be favoured, which, as the following sections show, may not necessarily represent the best long term option when other factors are taken into account. Experience in other countries where electricity supply is a privatised industry eg Germany and Sweden, suggests that operators have only acted to control emissions when forced to do so by legislation[6,7]. Having said that, it is difficult to prove that nationalised operators would have behaved any differently. Certainly in the UK prior to privatisation the CEGB put up major resistance to fitting flue gas desulphurisation (FGD), for example, right up until 1986 despite much international pressure. It should be stressed however, that when the CEGB did finally announce its programme of FGD retrofits, this was entirely its own decision, it was under no legal obligation to do so at that time. All things considered, it is difficult to see why a privatised electricity generator should adopt costly controls unless it is required to by law because in terms of profits, it is not normally in its interests to do so.

Meeting the Large Combustion Plants Directive

The privatised electricity generating companies are currently faced with the challenge of complying with the LCPD. The emission reductions allocated by the DoE for existing power plants applied to all plants in the UK. The CEGB was allocated a share of this total, which as a result of privatisation has now been divided between National Power and PowerGen on a roughly 60:40 basis, corresponding to annual coal burn of the two generators (see Table 2).

Although the way in which the generators meet their targets is entirely up to them, it is clear from the following sections that the policies proposed by the generators are strongly influenced by their new-found private status. By creating an industry in which profit has become of paramount importance, the pressure for cost cutting has extended to environmental policies and specifically, to the approaches taken to control air pollution.

Policies Adopted by Generators for Compliance with Air Pollution Control Legislation

In order to meet the emission reductions set out in the LCPD, power generators are

faced with a range of options from which to choose (see Table 3). The two generating companies, National Power and PowerGen have developed their own strategies for compliance, in line with the three stage reductions shown in Table 2, but as this section will show, these strategies are broadly the same.

The relationship between the coal industry and the electricity industry extends back a long way, power plants have been the largest single user of coal produced by British Coal Corporation (BCC) and its predecessor the National Coal Board (NCB) since 1965/66[8]. Annual power plant consumption of coal currently accounts for over 80% of production[9] (see Figure 10.3). The purchase of UK coal for power plants is arranged by agreements between BCC and the generators. The most recent agreement was made in April 1990 when National Power and PowerGen contracted to buy minimum quantities of coal at a predetermined price for the next three years. Between them they agreed to receive 70 million tonnes in each of the first two years and 65 million tonnes in the third year[10].

The system of agreements between BCC and the electricity generators has been advantageous to both sides because it provides security of fuel supply to the generators and guaranteed sales for a major part of production for BCC[11]. However it has also restricted imports of coal as the generators were already committed to receiving most of their coal needs from BCC (even though there have been no formal restrictions on coal imports). The price of coal is pre-determined in the contract, and set to decrease in real terms during the contract period[12]. However, despite the price decline each year, the price paid by the generators, remains above that of coal available on the international market[13]. This effective protection of the British coal industry is seen by some to be to the disadvantage of British consumers and efficient coal producers in other countries. The generators now share this view.

National Power's Strategy for Compliance

In deciding upon an emissions abatement strategy both generating companies must consider their current emission levels, the reductions demanded by the LCPD, and the options available for reducing emissions. In fact both National Power and PowerGen have already reduced their emission levels relative to 1980 as shown in Table 4, but further reductions will be needed to meet the 2nd and 3rd LCPD reduction targets.

National Power is currently fitting FGD to its 4000 MWe coal-fired power plant at Drax in North Yorkshire. Assuming work continues according to schedule, completion of the FGD plant is expected during 1996. Consequently this FGD plant will be able to contribute towards the 1998 reduction target, achieving a reduction of 240,000 tonnes of SO_2 per annum assuming Drax continues to operate as a base load plant[14]. Since National Power will be unable to meet its LCPD commitments solely by means of installing FGD at Drax, they are also planning to build a number of natural gas-fired power plants, operating as combined cycles. These Combined Cycle Gas Turbines (CCGTs) will replace existing coal-fired capacity and therefore reduce emissions as a result of the inherent clean nature of the gas and by the increased efficiency of the combined cycle process. The short construction time for these plants (3 years for a 1000 MWe plant) facilitates their contribution to the early stages of the reduction targets[15].

At the time of writing planning permission has been granted for National Power to construct two CCGTs, with a total capacity of 1300 MWe, whilst a further three CCGT plants are planned[16].

A second measure to be adopted is the importation of low sulphur coal. National Power has announced plans to import significant quantities of low sulphur coal once their current contract with British Coal expires[17]. Consequently, it would seem unlikely for National Power to renew their existing contract with BCC; or if they were to do so, they would be likely to contract much smaller amounts than they receive from the current contract. This assumption is supported by a statement made by National Power in 1990 that its consumption of British coal could fall from 45 million tonnes to 20 million tonnes or less by 2003[18]. The assumption here is that most if not all of the reduction in British coal consumption will be replaced by coal imports. Australia, Colombia, South Africa, and the USA are amongst those countries with potential to supply low sulphur coal for the UK market[19].

One of the major advantages which coal imports offer to the generators is that unlike FGD, a reduction in emissions will be almost instantaneous, once the coal has been delivered to the plant. Needless to say there are certain restrictions to deliveries, such as the availability of suitable port facilities, but in practical terms the importation of low sulphur coal represents a quick and cost effective solution to the problem of SO_2 emissions.

PowerGen's Strategy for Compliance

PowerGen has applied for consent to retrofit FGD at two of its 2000 MWe coal-fired plants, Ferrybridge C in West Yorkshire, and Ratcliffe-on-Soar in Nottinghamshire. So far consent has been received from the Secretary of State for Ratcliffe, and a decision on Ferrybridge C is still awaited. Since the construction time for a FGD plant of this size is about 6 years PowerGen will have no FGD installed before 1993, so the company will be adopting alternative SO_2 abatement measures in order to meet the first reduction target. These alternatives will then supplement the use of FGD in later years. The key measures being adopted by PowerGen are the importation of low sulphur coal and the combustion of natural gas in combined cycle.

In 1990 PowerGen predicted a decline in its consumption of British coal from 25 million tonnes to 18-20 million tonnes by 1998[20]. PowerGen have so far received planning consent for two CCGT plants with a total capacity of around 1600 MWe, and a further 1700 MWe are planned[21]. Although PowerGen has confirmed that it will rely primarily on low sulphur coal, with a limited contribution from CCGTs to meet the 1993 target, it acknowledges that there are a number of alternative options open to it and in order to maintain a flexible approach to electricity supply, and meet later emission targets it intends to keep all options open.

FUTURE IMPACTS OF POLICIES FOR SO_2 CONTROL

Burning Natural Gas in Combined Cycle Gas Turbines

The use of CCGT plants has been confirmed by both generators as playing an important part in their overall strategy for compliance with the LCPD, particularly in the early

stages. The extent to which this option is finally adopted will depend largely on the competitiveness of gas-fired generation (House of Commons, 1990a), but it is estimated that up to 10,000 MWe of CCGTs could be built nationally over the next few years (including independent generating companies)[23].

The key issue which will determine the success of CCGTs is the cost of natural gas in the future and its availability for use in electricity generation beyond the short term[24]. Privatised companies will only continue to generate electricity from natural gas whilst it is economically viable to do so, and this in turn relates to availability, once reserves begin to dwindle the price will rapidly increase, making CCGTs uneconomic.

Even though at current gas prices the generating costs of a new CCGT are considerably less than for a coal-fired plant with FGD, for example, a future increase in price could result in this economic advantage being lost. In the past National Power indicated that they expected the price of gas to go up to 20 pence per therm as a result of its use for electricity generation, but even at this price CCGTs would still have an economic advantage over modern coal-fired plants with FGD[25]. Both generating companies are of the opinion that gas prices would have to be nearer 30 pence per therm before this economic advantage were lost, however a recent Department of Energy forecast indicated such an increase was possible within the next 10 years[26]. If such a price increase does occur the decision to build new CCGTs could prove to be a very costly one for all generators choosing this option.

A second factor to determine the success of this option is security of supply. The current intention is that gas supplies will be obtained largely from the North Sea, but supplies are finite and even if supplies were obtained from other European countries such as Norway, the Netherlands and Russia, the lifetime of gas is much less than that of coal. Technically recoverable UK coal reserves are estimated to be 45 billion tonnes (i.e. over 500 years supply at current consumption rates[27]. Whereas UK proven gas reserves are 1255 billion m^3 (500,000 million therms)[28]. At current consumption rates these will last for 25 years. Based on the difference in calorific values of coal and gas given by Chappell & Joyce[29] it is possible to calculate that 10,000 MWe of gas-fired plant will require 3125 million therms of gas annually. On top of current gas consumption this will reduce the lifetime of UK gas supplies to only 21 years. Thus large scale gas importation would be required to meet the UK's requirements and this would contribute towards the nation's balance of payments deficit.

Despite the attractiveness of burning gas in combined cycle plants, it cannot be seen as anything other than a short term solution to the problem of reducing SO_2 emissions, for a number of reasons. Despite its apparent abundance at the present time, gas is a premium fuel which at current production rates will only last for 25 years on the basis of proven reserves and perhaps 37 years if probable reserves are included[30]. A major increase in demand seems likely as more countries seek methods of meeting stricter environmental regulations. An increase in demand will undoubtedly push prices up[31], and although the levels which they will achieve are difficult to predict, if for example they were to double, (which some believe they will)[32] the use of coal burning plants fitted with FGD would then become a cheaper option. As with the importation of low sulphur coal, the current economic advantage of gas combustion is welcomed by

generators in their desire to make a profit, and the long term implications seem to have been overlooked.

Impacts of Low Sulphur Coal Importation

Coal available on the world market is priced considerably lower than that supplied by British Coal and although the delivered price difference is greatly influenced by exchange rates, plant location and transport costs, imports can be up to £15 per tonne cheaper[33]. At the present time British Coal has a considerable transport advantage over imported coal because of the limitation on coal importation facilities and this advantage is particularly evident at inland power stations with rail links to neighbouring coal mines. At these plants the transport costs for British coal are up to £10 per tonne less than for foreign coal[34]. However, the cost advantage is much lower at many coastal plants, in particular those in the South East, and on the Thames Estuary, away from the main mining areas. Consequently, it is these plants which are the ones most likely to receive coal imports in preference to domestic supplies assuming the necessary development of port facilities goes ahead. If so, this would undoubtedly mean a loss of business for British Coal as generators took advantage of a cheaper source of fuel.

Once the transport cost advantage of British Coal is eroded, its market will decline as its production costs currently outweigh those of competing foreign nations, where labour is often very cheap, geology is more favourable, and health, safety and environmental standards may be very low, keeping production costs to a minimum[35].

Currently the international trade in steam coal is relatively small, around 140 million tonnes per annum[36] so if the UK were to demand 20-30 million tonnes per annum of imports (based on National Power and PowerGen's predicted reduction in British Coal consumption) this would put significant strain on the system and undoubtedly push prices up[37]. The amount by which prices may increase is uncertain, but there appears to be general agreement that prices would go up, certainly in the short term[38].

From the generators' viewpoint it is no doubt quite reasonable having supported BCC for so long, for them to choose alternative, cheaper supplies, which are also lower in sulphur. However, from BCC's point of view the generators' decision poses a real threat to the future of the coal industry. Without further long term contracts to supply coal to the generators the future of the coal industry looks bleak[39]. A large scale reduction in its major market will inevitably result in further contraction of BCC with pit closures and job losses. This would come on top of the massive job losses already incurred by the industry as a result of its intensive programme of restructuring and rationalisation aimed at reducing costs and increasing productivity, the results of which are shown in Figure 1.

It is possible that within the next decade the current cost advantage of imported coal will be reversed making domestic coal more competitive. In which case the generators would be tempted to switch back to using more domestic coal but by this time UK production would have been reduced to such a low level, it would be impossible to meet increased needs, and the re-opening of closed mines would be prohibitively expensive[40] with many coal reserves having been effectively sterilised[41]. The result would be that the generators would be locked in to a situation of having no alternative but to buy their fuel from foreign sources increasing the UK's balance of payments deficit,

whilst indigenous coal deposits lay beneath them, economically out of reach.

The competitive aspect which has been introduced to electricity generation by privatisation means that in future generators will aim to generate electricity as cheaply as possible, and since fuel costs represent a major proportion of total costs[42], this will mean buying the cheapest coal available. However, it has been shown that what appears to be the cheapest option in the short term may in fact become less attractive in the long term as the price of imported coal increases.

Summary

In 1988 the UK finally adopted the LCPD which meant that for the first time SO_2 emissions were legally controlled at source. Privatisation of the electricity supply industry in 1990 meant that the main concern of the generators was no longer to meet the demand for electricity regardless of the costs but instead to operate as a profitable commercial concern. The way in which the generators have chosen to comply with the emissions reductions of the LCPD has been strongly influenced by the necessity to minimise costs. The combustion of natural gas in CCGTs and importation of low sulphur coal are the currently favoured options for reducing emissions as they are cheap and quick to implement. However there are inherent disadvantages to both of these options. Security of supply and price are both uncertain and reliance on imports is strategically and economically undesirable. The current low costs of both options are likely to be short term, in the long term costs may be prohibitive, and supplies may dry up. Furthermore, a large scale switch from UK coal to imported coal and gas would be disastrous for the British coal industry, resulting in further pit closures, large scale job losses and sterilisation of reserves, resulting in the loss of an important and valuable energy resource.

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Source	(1000 tonnes SO_2)			
	1980	1993	1998	2003
Power plants	3006	2700	1803	1202
% reduction		10%	40%	60%
Industry	621	276	230	160
% reduction		56%	63%	74%
Refineries	268	100	95	90
% reduction		63%	65%	66%

Table 1: UK emission targets for the LCPD, allocated by sector

Source: Department of Environment, Scottish Development Department, Welsh Office, Department of the Environment for Northern Ireland, (1990). The United Kingdom's programme and national plan for reducing emissions of sulphur dioxide and oxides of nitrogen from existing large combustion plants. DoE, London.

Source	(1000 tonnes SO_2)			
	1980	1993	1998	2003
CEGB	2776	2516	1651	1110
% reduction		9%	40%	60%
National Power	1652	1497	982	660
% reduction		9%	40%	60%
PowerGen	1124	1019	669	450
% reduction		9%	40%	60%
Power plants in Scotland	142	104	99	57
% reduction		27%	30%	60%
Power plants in N. Ireland	88	80	53	35
% reduction		9%	40%	60%

Table 2: Allocation of reduction targets to generators

Source: Department of Environment, Scottish Development Department, Welsh Office, Department of the Environment for Northern Ireland, (1990). The United Kingdom's programme and national plan for reducing emissions of sulphur dioxide and oxides of nitrogen from existing large combustion plants. DoE, London.

Plant operator	1990 emissions (1000 tonnes)	Percentage reduction relative to 1980	LCPD target reduction for 1993
National Power	1519	8.1%	9%
PowerGen	1015	9.7%	9%

Table 4: SO_2 Emissions from National Power and PowerGen plants in 1990
Source: HMIP, (1990). United Kingdom inventory 1990. HMIP, London.

Coal cleaning
Combustion of low sulphur coal
Sulphur removal during combustion
Advanced combustion techniques
— Fluidised bed combustion
— Combined cycle
Combined heat and power
Energy conservation
Non-fossil fuels
— Nuclear energy
— Renewable energy

Table 3: Options for reducing SO_2 emissions resulting from the generation of electricity

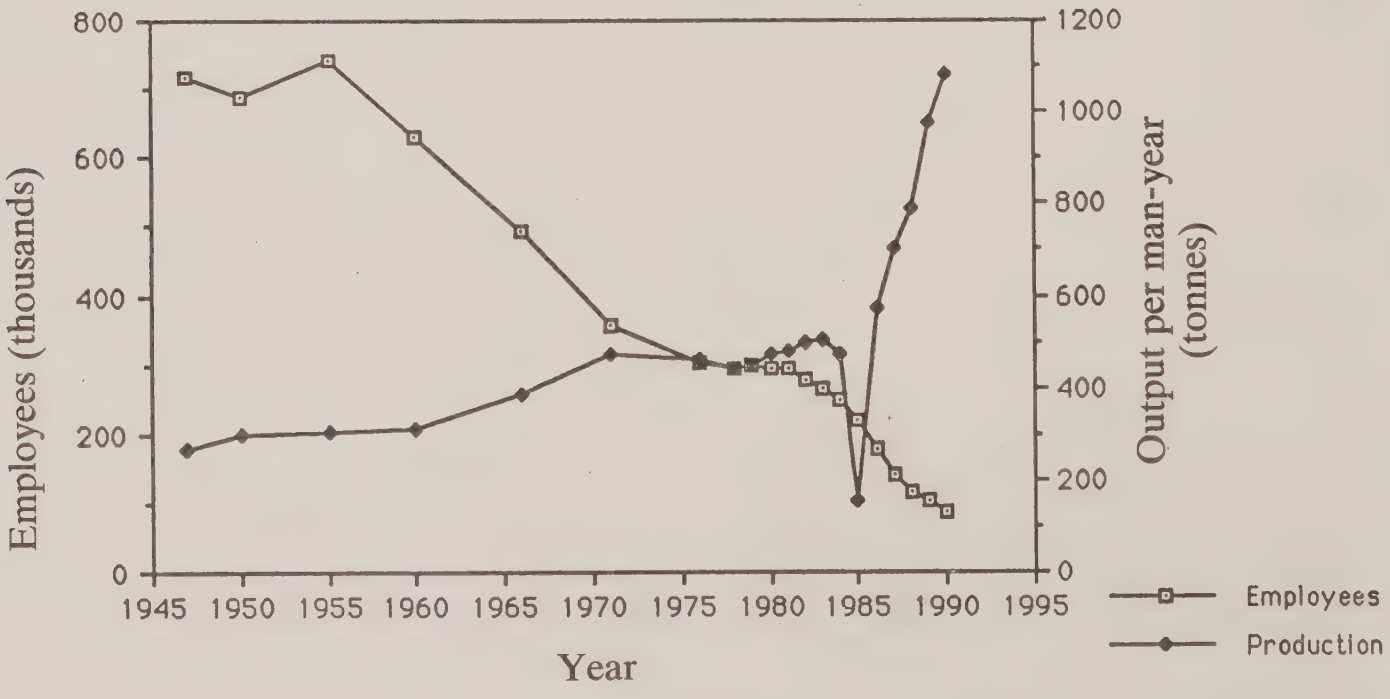

Figure 1: British Coal Corporation employee numbers and production 1947-1990

SMOKE CONTROL AREAS

This year smoke control figures are being published in *Clean Air* rather than the *Members Handbook* in order to provide more up to date data.

Over 40 local authorities are still completing smoke control programmes — mainly in the North West, Midlands and Yorkshire. However, Belfast is currently the only city where EC air quality standards for SO_2 are regularly exceeded. Emissions of SO_2 and black smoke from domestic sources are continuing to decline and have been halved over the last decade.

The following table lists the local authorities in the United Kingdom who enforce smoke control. The information is compiled directly from returns from local authorities, and it can be assumed that any authority not listed does not have a smoke control programme. The figures are for the position on 31 March, 1992.

The table shows the target date for completion of the smoke control programme; final area to be covered in hectares; the area currently covered; the percentage of the total of each local authority area currently covered by smoke control and the number of premises currently covered by smoke control orders.

British Isles divisions, issued by the Department of the Environment are listed below:

EAST ANGLIA	Norfolk, Suffolk.
EAST MIDLANDS	Derbyshire, Leicestershire, Lincolnshire, Northamptonshire, Nottinghamshire, Cambridgeshire.
GREATER LONDON	
NORTH WEST	Cheshire, Greater Manchester, Lancashire, Merseyside.
NORTHERN	Cleveland, Cumbria, Durham, Northumberland, Tyne and Wear.
NORTHERN IRELAND	
SCOTLAND	
SOUTH EAST	Bedfordshire, Berkshire, Buckinghamshire, East Sussex, Essex, Hampshire, Hertfordshire, Kent, Oxfordshire, Surrey, West Sussex.
SOUTH WEST	Avon, Cornwall, Devon, Dorset, Gloucestershire, Somerset, Wiltshire.
WALES	Clwyd, Dyfed, Gwent, Gwynedd, Mid Glamorgan, Powys, South Glamorgan, West Glamorgan.
WEST MIDLANDS	Hereford and Worcester, Salop, Staffordshire, Warwickshire, West Midlands.
YORKSHIRE and HUMBERSIDE	Humberside, North Yorkshire, South Yorkshire, West Yorkshire.

Key
Comp — completed
n/k — not known
susp — programme suspended
clld — programme cancelled
x — no return received this year, previously returned figures used.

Authority	Target Date		Final Area (ha)	Area on 31/3/92 (ha)	% of Total	No. of Premises
EAST ANGLIA						
Cambridge CC	Susp		n/k	24858	14	n/k
Kings Lynn & W N BC	n/k		841	841	0.2	4474
Norwich CC	Susp		3907	621	16	3565
Peterborough CC	n/k		n/k	2758	8.3	34126
EAST MIDLANDS						
Amber Valley BC	n/k		19300	3971	6	8519
Ashfield CC	1994	x	23936	16478	61	28708
Bassetlaw DC	1993		7250	6522	9.7	33719
Blaby DC	Comp	x	9365	9365	29	22243
Bolsover DC	1993		16145	14161	88	27215
Broxtowe BC	Comp		6017	6017	75	36000
Chesterfield BC	Comp 1991		16418	16418	100	40015
Corby DC	Comp		1029	1029	13	12000
Derby CC	Comp 1986		19282	19282	100	90233
Erewash BC	1992		2005	1770	16.2	19626
Gedling BC	1994/5		2773.5	2502.5	20.9	41020
High Peak BC	Comp 1986		1666	1666	3	14148
Leicester CC	Comp 1975		17232	17232	100	108878
Lincoln CC	Comp		3571	3571	100	41618
Mansfield DC	1993		7692	7595	98.7	44274
N E Derbyshire DC	n/k		68484	20838	30	30266
Newark & Sherwood DC	Comp 1991		3153	3153	4	11702
North Kesteven DC	n/k		n/k	121	0.13	990
Northampton BC	1993		8066	3200	40	22800
Nottingham CC	Comp 1991		7431.9	7431.9	100	134085
Oadby & Wigston BC	n/k		n/k	59	2.5	903
Rushcliffe BC	Comp 1983		1234	1234	3	11569
South Holland DC	n/k		72000	0	0	0
South Kesteven DC	Comp		1550	1550	1.6	15400
West Lindsey DC	Comp	x	69	69	0.02	1
GREATER LONDON						
Barking & Dagenham LB	Comp 1985		8886	8886	100	70118
Barnet LB	Comp		n/k	8811	100	134329
Bexley LB	Comp		2603	2603	100	89886
Brent LB	Comp 1984		4421	4421	100	109245
Bromley LB	Comp 1979		29600	29600	79	137000
Camden LB	Comp	x	5365	5365	100	88214
Corp. of London	N/A		N/A	275	100	10872
Croydon LB	Susp		21395	13164	62	106000
Ealing LB	n/k		n/k	5550	100	118000
Enfield LB	Comp 1977		20061	20061	100	89187
Greenwich LB	Comp 1972		11722	11722	100	94938
Hackney LB	Comp	x	4814	4814	100	n/k

Authority	Target Date		Final Area (ha)	Area on 31/3/92 (ha)	% of Total	No. of Premises
Hammersmith LB	Comp 1967		3988	3988	100	73000
Haringey LB	Comp	x	7491	7491	100	84452
Harrow LB	Comp 1975		12553	12553	100	78089
Havering LB	Comp		12000	12000	100	80000
Hillingdon LB	Comp 1986		n/k	n/k	100	102187
Hounslow LB	Comp 1972		14460	14460	100	94967
Islington LB	Comp 1969		9091	9091	100	65000
Kensington & Chelsea	Comp		2950	2950	100	25288
Kingston U Thames LB	Comp 1980		1496	1496	100	55738
Lambeth LB	Comp 1978		2724	2724	100	116000
Lewisham LB	Comp		n/k	n/k	n/k	n/k
Merton LB	Comp 1977		9380	9380	100	65800
Newham LB	Comp	x	8987	8987	100	88462
Redbridge LB	Comp 1973		5650	5650	100	100000
Richmond LB	Comp		12866	12866	100	88914
Southwark LB	Comp 1988		2880	n/k	100	90000
Sutton	Comp	x	10732	10732	100	67730
Tower Hamlets BC	Comp		1972	1972	100	n/k
Waltham Forest LB	Comp 1985		3967	3967	100	89900
Wandsworth LB	Comp 1980		8861	8861	100	121000
Westminster LB	Comp 1970		2880	2158	100	116300
NORTH WEST						
Blackburn BC	Comp 1986		5278.5	5278.5	38.4	48271
Bolton MBC	1993		34572	33399	96.5	101785
Burnley BC	Comp 1980		23700	23700	82	42050
Bury MBC	Susp	x	24505	18020	74	52604
Chorley BC	1995		1622	143	2.2	3186
Crewe & Nantwich BC	n/k	x	n/k	1957	1.8	8731
Ellesmere Port BC	Comp 1982		1577	1577	21	23114
Halton BC	Susp		n/k	7782	90	39933
Hyndburn BC	Comp 1980		16611	16611	92	37976
Knowsley MBC	Susp		n/k	2580	23	51295
Lancaster CC	n/k	x	n/k	2402.2	5.7	9478
Macclesfield BC	Comp		n/k	123	0.24	2635
Manchester CC	Comp 1985		11624	11624	100	214000
Oldham MBC	1992		8645	8645	60.7	102788
Pendle BC	Comp		14964	14964	36	29500
Preston BC	Comp 1985		8347	8347	26	48675
Ribble Valley BC	Comp		870	870	1.5	890
Rochdale MBC	Comp 1989		30724	30724	70	78222
Rossendale BC	Comp 1991		12586	12586	91.9	26816
Salford CC	Comp		9690	9690	100	103200
Sefton MBC	n/k		14742	2587	5.7	13463
South Ribble BC	1995		11110	4874	44	35007
St Helens MBC	1992		30461	30162	91.5	69487
Stockport MBC	n/k		31147	24707	79	104027
Tameside MBC	Comp 1980		10360	10360	100	100711
Trafford MBC	Comp 1982		9433	9433	100	108000
Vale Royal BC	n/k		n/k	2777	7.2	11236
Warrington BC	Comp		16733	16733	95	73400
West Lancashire DC	Clld		n/k	71701	n/k	14236
Wigan MBC	n/k		n/k	11241	56	73255
Wirral MBC	n/k		15548	10042	67	103187

Authority	Target Date		Final Area (ha)	Area on 31/3/92 (ha)	% of Total	No. of Premises
NORTHERN						
Allerdale DC	1993	x	8816	1413	0.4	4348
Alnwick DC	n/k		n/k	1.9	0.004	76
Blyth Valley BC	1992		7142	7142	100	35000
Carlisle CC	Susp	x	n/k	898	0.3	4450
Castle Morpeth BC	n/k		n/k	62603	1.7	5690
Copeland BC	n/k		n/k	360	0.2	1671
Darlington BC	Comp 1987		6469	6469	13.1	35482
Derwentside DC	n/k		66944	834	1.3	3978
Easington DC	1993		3645	3161	22	28488
Gateshead MBC	1992		14314	13344	93	94500
Hartlepool BC	Comp 1982		3672	3672	39	34416
Langbaurgh BC	1994		5329	5167	21.5	47340
Middlesbrough BC	Comp 1979		4947	4947	91	56100
Newcastle-u-Tyne MBC	Comp 1978		13961	13961	100	135000
North Tyneside MBC	n/k		8367	8367	100	n/k
Sedgefield DC	None		189	189	8.6	6000
South Derbyshire DC	n/k		n/k	69474	2	4812
South Tyneside MBC	1990	x	16285	14525	90	68002
Stockton-on-Tees BC	Comp	x	16227	16227	34	51364
Sunderland CC	1998		13973	4937	35.3	51364
Wansbeck DC	1993		2661	10170	80	19368
NORTHERN IRELAND						
Antrim BC	Comp 1976		740	740	100	7192
Ards BC	None	x	n/k	105.3	0.05	823
Armagh DC	n/k	x	n/k	n/k	5	96
Ballymena BC	Susp	x	n/k	325	0.9	890
Belfast CC	1996		7101.5	5179.5	72.9	84587
Castlereagh BC	n/k		2646	2208	27	19454
Down DC	None		n/k	196	0.003	n/k
Larne BC	n/k	x	n/k	5	0.01	192
Newtonabbey DC	n/k	x	n/k	1776	5	7084
North Down DC	n/k		n/k	176	5	1100
SCOTLAND						
Bearsden & Milngavie	n/k	x	n/k	8800	98	15550
Clackmannan DC	n/k		39680	642	1.6	3900
Clydebank DC	Comp 1980		9239.7	9239.7	100	19756
Cumbernauld & Kilsyth	n/k		10298	10298	n/k	24021
Cunninghame DC	1996		86966	846	1	6468
Dumbarton DC	2005		11787	2833	6	16957
Dundee CC	Comp 1981		5123	5123	100	79778
Dunfermline DC	1995		2708	2300	3	5651
East Kilbride DC	Comp		n/k	5471	8	26790
Edinburgh DC	1995		23877	12950	52	105000
Ettrick & Lauderdale	None		n/k	714.8	0.07	6993
Falkirk DC	1995		20000	15945	22	39432
Glasgow CC	1992		50081	48274	96	345886
Hamilton DC	n/k		n/k	1686.3	12.8	16844
Inverclyde DC	n/k		n/k	328	23	9290
Kilmarnock & Loudoun	n/k		n/k	41	<1	577
Kirkcaldy DC	1996		2576.2	5839	9.5	7083

Authority	Target Date		Final Area (ha)	Area on 31/3/92 (ha)	% of Total	No. of Premises
Kyle & Carrick DC	n/k		98.4	98.4	0.04	156
Monklands DC	1995		40000	8000	20	25612
Motherwell DC	n/k		n/k	347.4	2	6518
Nithsdale DC	None		1507	827	<1	1822
Perth & Kinross DC	n/k	x	0	0	0	40500
Renfrew DC	Clld	x	21986	21986	29	71500
Roxburgh DC	n/k	x	1240	425	0.1	1900
Stirling DC	n/k		n/k	152	n/k	2050
Strathkelvin DC	n/k		160000	2304	9	5500
West Lothian DC	n/k		103401	6121	6	16665
SOUTH EAST						
Aylesbury Vale DC	Susp		3594	913	>1	5280
Basildon DC	n/k		n/k	4528	16.5	21682
Bracknell Forest BC	Comp	x	3811	3811	14	35000
Brentwood DC	n/k	x	n/k	14903	40	2856
Brighton BC	Susp		1472	1472	10	24392
Broxbourne BC	Comp 1988		12911	12911	100	38553
Canterbury CC	n/k	x	77207	2625	0.3	2965
Crawley BC	n/k		11520	4365	37.9	38243
Dacorum BC	Comp		3731	3731	7	15000
Dartford BC	Comp		17267	42666	n/k	31035
Elmbridge BC	n/k	x	0.5	n/k	0.5	2
Epping Forest DC	n/k		n/k	600	1.7	2463
Gillingham BC	Comp		3240	3240	100	37183
Gravesham BC	Comp 1985		1834	1834	18	25278
Guildford BC	Susp	x	n/k	2885	4	10517
Harlow DC	1992		2905	2505	80	30000
Hertsmere DC	n/k	x	24169	2121	8.7	7913
Luton BC	Comp 1979		4336	4336	100	79127
Milton Keynes BC	Susp		3180	3180	10.3	33300
North Bedfordshire BC	Comp 1987		2200	2200	4	35800
North Herts DC	n/k	x	1342	1342	1.6	5000
Oxford CC	Susp		1534	941	61	35000
Portsmouth CC	Susp	x	9248	n/k	16.8	19039
Reading BC	Susp		3995	2496	62	45000
Rochester U Medway CC	n/k		n/k	6383	16	19974
Sevenoaks DC	Susp		n/k	1341	1	n/k
Slough BC	Comp 1988		2757	2757	100	38626
South Oxfordshire DC	n/k		n/k	506	0.3	6.3
Southampton CC	Comp 1981		1750	1750	32.6	27551
Spelthorne BC	n/k		1388	1175	85	31692
Stevenage BC	Comp	x	6257	6257	100	39000
Thurrock BC	n/k		n/k	4101	22.2	22761
Watford BC	Comp 1979		5275	5275	100	31980
Windsor & Maidenhead RB	Clld	x	n/k	770	1	2655
Wycombe DC	Comp		1546	1546	5	21500
SOUTH WEST						
Bath CC	1993		2870	1309	46	27543
Bristol CC	Comp 1988		26516	26516	100	155340
Cheltenham BC	n/k		4680	1645	35.2	16235
Exeter CC	n/k		11660	7042	60	19000
Kingswood BC	n/k		n/k	5.3	0.1	130
Northavon DC	Comp 1990		2456	2456	5.3	12885

Authority	Target Date		Final Area (ha)	Area on 31/3/92 (ha)	% of Total	No. of Premises
WALES						
Alyn & Deeside DC	n/k		n/k	18.5	0.1	780
Delyn BC	n/k		n/k	1200	1.7	820
Newport BC	n/k		n/k	27	0.1	1178
Swansea CC	Comp	x	249	198	<1	2147
Wrexham Maelor BC	Susp		1180	876	2.4	10390
WEST MIDLANDS						
Birmingham CC	Comp 1986		65335	65335	100	459104
Cannock Chase DC	1998		7800	400	5.13	7310
Coventry MBC	Comp	x	23856	23856	100	76659
Dudley MBC	Comp 1989		9794	9794	100	132500
East Staffordshire DC	1994		4120	3836	5	16404
Lichfield DC	1993		2800	2650	20	16600
Newcastle U Lyme BC	Susp		n/k	7351	14.1	31600
North Shropshire DC	Susp		1310	512	0.3	1895
North Warwickshire	1992		4377	4330	15	15562
Nuneaton & Bedworth	1994		5900	4366	55	29971
Rugby BC	Comp 1979		7010	8112	9	23124
Sandwell MBC	Susp		8559	2645	31	34446
Shrewsbury & Atcham BC	n/k		n/k	404	0.7	3350
Solihull MBC	1993		5098	4370	24	47504
South Staffs DC	Susp		6400	2099	5.1	3066
Staffs Moorlands DC	1993		2500	1436	2.5	10884
Stoke-on-Trent CC	1992		9287	9287	100	99109
Tamworth BC	Susp	x	7648	4830	63	21850
Walsall MBC	n/k		26266	21390	81.4	91000
Warwick DC	n/k		2737	2737	10	36003
Wolverhampton MBC	1996		6879.2	4854	70.5	62925
Worcester CC	1993		3184	2703	82	26727
Wrekin DC	Susp		19311	9159	13	19966
Wyre Forest DC	n/k		n/k	639	1.3	6867
YORKSHIRE & HUMBERSIDE						
Barnsley MBC	1992	x	14910	10793	45	78158
Bradford MBC	n/k		91444	50838	56	180106
Calderdale MBC	n/k		n/k	16443	45.2	83000
Chester Le Street DC	n/k		5100	899	13	2497
Craven DC	Comp	x	8498	8498	29	8207
Doncaster MBC	1993		57709	20835	36	84710
Glanford BC	n/k	x	139346	15264	11	5135
Harrogate BC	Susp		8500	3643	42.9	21015
Hull CC	1993		7101	6192	87	98208
Kirklees MBC	1993		41441	27326	70	122430
Leeds CC	Susp		56027	30598	54.6	223463
Rotherham MBC	1992		28301	21735	77	71919
Ryedale DC	n/k		n/k	715.4	0.2	5180
Scunthorpe BC	Comp 1981		8337	8337	100	27200
Selby DC	Comp 1990		3097	3097	4.3	11285
Sheffield CC	Comp 1978		58048	58048	64	222338
Wakefield MBC	1993		33320	21837	65.5	128185
York CC	Comp		3405.6	3405.6	100	41186

UPDATE

ENERGY SAVING CAMPAIGN

The Department of the Environment Energy Efficiency Office is investing £10 million in a three year campaign, aimed at raising energy awareness amongst householders. Twenty five per cent of the country's energy consumption is attributable to domestic use. The "Helping the Earth Begins at Home" campaign aims to provide expert advice on energy saving measures, including home energy efficiency testing. An information hotline is being provided, with calls charged at local rates, on 0345 247347, along with a free leaflet available from Helping the Earth Begins at Home, PO Box 200, Stratford-upon-Avon, Warwickshire, CV37 9ZZ.

ENVIRONMENT WHITE PAPER — SECOND ANNUAL REPORT

The second annual report on *This Common Inheritance* was published on 1 October. It describes the range of actions the government has implemented over the past year and sets out steps being taken to introduce more stringent environmental standards over the next two years. New initiatives on air pollution include:

- a discussion paper to be issued on the scope of local authority air pollution control before the end of the year.
- publication of a discussion paper on integrating DoE and local authority monitoring during 1993.
- new standards to be set for ground level ozone, benzene, carbon monoxide, sulphur dioxide and 1,3 butadiene.
- detailed assessment of indoor air quality and a series of booklets for householders on indoor pollution problems.

The Government is placing strong emphasis on economic instruments and making the market work for the environment. For NSCA comment see *Editorial,* this issue.

This Common Inheritance: The Second Year Report, published by HMSO, £21.00.

POLLUTION MONITORING NETWORK

Local authorities can join the Department of Environment air pollution monitoring network, but they will have to find their own funds. The network requires that particulates, SO_2, NO_2, ozone and CO are monitored. Addressing NSCA's seminar on air pollution monitoring (30 June 1992), Peter Mallaburn of the DoE Air Quality Division suggested that the annual cost to local authorities wishing to join the network would amount to £120,000 per site. Authorities should be committed to operate the sites for at least ten years and would have to comply with independent quality assurance and control assessment.

The DoE is developing the national network and is identifying priority sites for monitoring, but is keen to speed up

the process by adding other local authority sites in urban areas. These "priority assisted sites" would receive DoE support for training, quality assurance and control procedures and the link to the national network. All other costs — equipment, operation, housing and security — would have to be met by the local authority.

ENVIRONMENT AND HEALTH CENTRE FOR EUROPE

In response to the need for more staff and resources in Europe, the World Health Organisation has opened a new European Centre for Environment and Health, based in Bilthoven, Netherlands and Rome, Italy. During 1992-3 the Centre is concentrating on collecting and analysing existing information on environment and health from each member state. This information will be published in a report entitled "Concern for Europe's Tomorrow", and form the basis of a longer term programme for forecasting changes and measuring trends. The aim is to highlight priorities for action in Europe.

MEASURING AIR EXCHANGE RATES IN THE WORKPLACE

The Health and Safety Executive has published new on-site test methods for measuring air exchange rates in factories and offices. Increasing awareness of indoor air quality and HSE minimum ventilation requirements (set out in EH22 *"Ventilation of the Workplace"*) have made it necessary to define a method by which ventilation rates can be measured, particularly for buildings which rely on natural ventilation.

The test methods involve the release of tracer gas into the building's atmosphere, which is mixed using a small blower. The gas concentration is then measured as it is diluted by incoming fresh air. Details are published in document no. 73 of HSE's series "Methods for the Determination of Hazardous Substances", *Measurement of Air Change Rates in Factories and Offices*, £2.50 from HMSO.

CODE OF GOOD AGRICULTURAL PRACTICE

The Ministry of Agriculture, Fisheries and Food has now published a *Code of Good Agricultural Practice for the Protection of Air.* NSCA made detailed comments on the draft (see *Clean Air, Vol. 21 No. 4*), a substantial number of which have been incorporated into the final document.

Even so, the published code carries little legal weight and fails to address with any substance the broader contribution that farming makes to atmospheric pollution. It also relies heavily on the fact that measures to control odour from livestock production will reduce ammonia emissions. The weakness in this approach is that there will be no incentive to control ammonia where there is no need to control odour. Nevertheless NSCA welcomes the code as the first step towards regulating air pollution from agricultural activities, which still remains relatively free from legislative controls.

RADON AFFECTED AREAS

The National Radiological Protection Board recently announced that Northamptonshire and parts of Somerset and Derbyshire must now join Cornwall and Devon in being designated as Affected Areas for radon in homes. Within these areas, homeowners are advised to have radon measurements made and take remedial measures if

action levels for radon are exceeded. Worst affected of the areas, with an estimated 10-30% of homes above the 200 Bq m^{-3} action level, are areas around Buxton, Kettering and Northampton, Shepton Mallet and West Somerset.

NEW RADON GUIDE

The Department of the Environment has just launched a third updated edition of *The Householders' Guide to Radon.* This booklet is designed to help those concerned about high concentrations of radon in the home, and will be made widely available in radon affected areas.

It covers radon and its affects, monitoring, practical advice on remedial work and the results of recent Government funded research into the effectiveness of remedial measures.

Copies free from The Householders' Guide to Radon, Room A.518, Romney House, 43 Marsham Street, London SW1P 3PY.

NOISE CONTROLS IN SCOTLAND

The Scottish Office issued proposals for controls on noise nuisance in the street and burglar alarms on 12 August. These are similar to those issued for England and Wales (see NSCA comment in *NSCA Views* section) and will give local authorities powers to use statutory noise nuisance abatement procedures to control nuisance in the streets. Powers to require the fitting of cut-out devices on burglar alarms are also included.

ROAD SURFACE NOISE

After an in depth review Kenneth Carlisle, Minister for Roads and Traffic, has announced new measures to reduce traffic noise from road surfaces. Motorways and trunk roads carrying over 75,000 vehicles a day will be constructed with composite materials comprising a continuously reinforced concrete road base surfaced with hot rolled asphalt, or be of fully flexible construction. Similar restrictions for roads carrying less traffic will be considered on a scheme by scheme basis.

In noise sensitive areas, porous asphalt will be used where: conditions are suitable, the benefits outweigh the higher cost, and the benefits outweigh the needs for more expensive winter maintenance and more frequent resurfacing.

There will also be further research and development into achieving better and quieter roads and road surfaces, including the trial of a new concrete exposed aggregate surface which has been successfully used in some European countries. The use of other mitigating features such as earth mounds and noise barriers will continue, with an announcement on improving these features expected later this year.

NOISY PARTIES

The Department of the Environment has issued its guidance to local authorities on how to deal with noisy parties. The guidance goes into some detail on the current legislation, but contains no new recommendations or guidelines. Not all local authorities are satisfied with the powers available to control noisy parties, and a Private Members Bill sponsored by Andrew Hunter MP is likely to address this next year. NSCA plans to host a seminar on noisy party controls in the near future.

POWER GENERATION IN THE OPEN MARKET

Speaking at a conference on Air Pollution and Health in the South East Thames Corridor, NSCA Secretary General Dr Tom Crossett gave a paper entitled *"Power Generation in the Open Market"*. The paper outlines the post war history of the electricity industry to the point of privatisation. It explains the new market and reviews options for generation and opportunities for improving the efficiency of electricity use.

Copies of the full paper are available from NSCA's office at 136 North Street, Brighton BN1 1RG.

NEW CHAIR IN ENVIRONMENTAL LAW

William Howarth, BA, LLM, has been appointed to the new Chair in Environmental Law at the University of Kent at Canterbury. The first advertised post of its kind, it is jointly sponsored by solicitors Cripps Harries Hall and water and environmental services company Saur UK. The sponsorship, which runs for a minimum of five years, will enable the professor to study and provide advice on existing and pending environmental legislation in the UK and EC.

GOOD BONFIRE GUIDE

To coincide with Guy Fawkes night, NSCA is launching a new extended *Garden Bonfire* leaflet. Produced in association with the Department of the Environment, it explains the pollution and health problems caused by bonfire and barbecue smoke and relevant legislation. For those who are still not convinced, a set of Good Bonfire Guidelines are set out to minimise nuisance.

Copies of *Garden Bonfires* from NSCA, 136 North Street, Brighton BN1 1RG. Single copies free, £4.95 per 100, £32.50 per 1000.

NSCA TELEPHONE NUMBER

Please note change of telephone number effective Saturday 5 December 1992

BRIGHTON (0273) 326313

BOOKS AND REPORTS

GENERATION IN THE 1990's: ELECTRICITY CAPACITY AND NEW POWER

Oxford Economic Research Associates, 1992. £245. ISBN 1873482043.

Life after electricity privatisation has been full of surprises. Proposals for power projects blossom and wither bewilderingly as entrepreneurs seek backers and blessing from the host of regulatory authorities who now have a finger in the pie. The public too now has more access to the process of licensing, consenting and authorising new electricity works. One assumes that the entrepreneurs understand the complexity of their chosen field, but potential investors, regulators and the public must often be baffled as to where a project which is of concern to them fits into the grand scheme of things. For anyone with a serious interest in any development of the electricity industry, *Generation in the 90's* provides a perspective which is hard to find elsewhere. The report is to be commended not only for its lucid overview of an industry in the throws of unprecedented change, but also for the wealth of detail on individual projects which Dieter Helm and his team in Oxford have assembled.

ENVIRONMENT INDUSTRY YEARBOOK 1993

The Environment Press, 1992. £69.00. ISBN 0951909606.

This is the first edition of a new annual guide to equipment suppliers, consultants and services in the area of environmental protection. It includes suppliers and consultants, water and waste water services, laboratory analysis, training and recruitment, legal services and waste management — all with quick reference classified guides, as well as a directory of regulatory and independent organisations. It is the most comprehensive directory of environmental services yet produced.

RIVER POLLUTION — A SLEUTH'S GUIDE

Friends of the Earth, 1992. £2.95. IBSN 185701152.

A simple but thorough guide to rivers, pollutants and potential polluters. It gives a basic resume of the law and statutory bodies, and helpful advice on identifying and reporting river pollution.

GREENHOUSE EARTH

A. Nilsson, J. Wiley & Sons, 1992. £9.95. ISBN 047193628.

The book seeks to assimilate the messages of the wide range of reports on the greenhouse effect and make them accessible to the lay reader. It draws from the work of the Intergovernmental Panel on Climate Change and presents the findings of current researchers, and considers the possible future scenarios in the light of these.

CAMPAIGNERS GUIDE TO USING EC ENVIRONMENTAL LAW

R. Macrory, Council for Protection of Rural England, 1992. £9.00.

A guide to the mechanisms within EC law that can be used by individuals. It aims to demonstrate how EC legislation can be used by anyone seeking to secure more effective environmental protection. The first part looks at environmental legislation and its interpretation in the UK. The second describes the procedures involved in making a complaint to the European Commission.

ALL CHANGE — A NEW TRANSPORT POLICY FOR BRITAIN

Metropolitan Transport Research Unit, Transport 2000 and Institute for Public Policy Research, 1992. £5.00.

Inspired by the Dutch "Travelling Clean" study, this is the first in a series of reports which set out to investigate transport in the context of quality of life. It looks at changing patterns of movement without reducing numbers of journeys and identifying the policies and programmes which can achieve these targets. This report constitutes the first stage of the research and sets targets for land use, air quality and noise levels.

ATMOSPHERIC POLLUTION — A GLOBAL PROBLEM

D.M. Elsom, Blackwell, 1992, £14.95. ISBN 0631173080.

A revised and updated edition of this textbook for undergraduates, which provides an accessible and comprehensive introduction to global atmospheric pollution. Part 1 examines the nature, sources and effects of pollution and Part 2 looks at national and international approaches to pollution control, providing a useful overview of US, UK, EC and international policies.

EXHAUSTING OUR OPTIONS: FUEL EFFICIENT CARS AND THE ENVIRONMENT

L.J. Archer, Oxford Institute of Energy Studies, 1992. £14.00. IBSN 0948061723.

The report considers the relative merits of energy efficiency, lighter hydrocarbons and non hydrocarbon resources for reducing CO_2 emissions from cars. It also considers the negative aspects of energy saving technologies, in an effort to give a realistic view of the potential for reducing the environmental impact of cars. It concludes that the technologies which can reduce vehicle emissions exist already, and asks why they are not being acknowledged by car producers and introduced onto the market.

REGISTERS OF CONTAMINATED LAND USES: LOCAL AUTHORITY SURVEY

R. Smith, Robens Institute of Health and Safety, 1992. £5.00.

Based on a survey of local authorities, this report assesses their attitudes to the introduction of contaminated land registers. It covers information sources, training, funding and the usefulness of registers.

FOR EARTH'S SAKE

Commission on Developing Countries and Global Change. International Development Research Centre, 1992. $14.95. ISBN 0889366225.

The International Development Research Centre was set up to present a Southern perspective on global environmental and social issues. This report examines the environment/development crisis and the causes of the crisis at national and global level. It argues that the key to solving global environmental difficulties lies in eradicating the more immediate problems of resource degradation and disasters in the South. It proposes a research agenda to address the social issues facing the people of the Third World, and thus the global crisis facing us all.

IN THE COMPANY OF THE GREEN

D. Bernstein. ISBA, 1992. £16.00. ISBN 0906241235.

Written by a communications expert, this book aims to help companies to understand the implications and processes involved in talking about environmental matters. Taking examples of thoughtless or misguided use of green messages, it emphasises the care that must go into communicating any sort of 'green' ideas or claims, both in house and to the outside world. The 'paradox of green marketing' is examined and companies are advised to 'say only that which can stand up to the most rigorous, independent and expert scrutiny'.

ENVIRONMENTAL ISSUES IN THE 1990s

ed. A.M. Mannion, S.R. Bowlby. Wiley, 1992. £14.95. ISBN 0471933260.

An introductory text covering a wide range of geographical issues aimed at sixth formers and first year undergraduates. It is divided into three sections — Ideas and Concepts, Global Issues and Local Impacts and Reactions, and aims to provide an overview of the key debates on environmental change and policy for the decade.

OUR PLANET, OUR HEALTH

WHO Commission on Health and the Environment, World Health Organisation, 1992. Sw. fr. 45.—. ISBN 9241561483.

This report aims to look at health in the context of development and environmental change. It examines the areas of food and agriculture, water, energy, industry and urbanisation. In each case it assesses the health effects of regional policies and recommends ways of mitigating them. The Commission sets three global objectives: sustainable health for all, attainment of an environment that promotes health, and awareness of individuals and organisations of their reponsibility for health and its environmental basis.

THE GREEN CAR GUIDE

P. Nieuwenhuis et al., Greenprint, 1992. £7.99. ISBN 1854250760.

This book provides a comprehensive survey of the environmental impact of cars. It exa-

mines emissions and legislation, car production, alternatives and integrated transport policy. A brief survey of the major producers and of the most efficient models currently on the market is also given. Some of the statistical information will date quickly, and some of the resource information is already out of date, but there is plenty of interesting material for anyone concerned about the overall impact of the motor industry.

ENVIRONMENTAL AUDITING — A GUIDE TO BEST PRACTICE IN THE UK AND EUROPE

L. Grayson, New British Library, 1992. £20.00. ISBN 0946655588.

Recognising the increasing pressure on organisations and businesses to assess the environmental impact of their activities, this guide provides a resume of legislation and policy in the UK and Europe. It summarises codes of practice and standards both for industry and local government and describes 199 reference documents, all of which are available through the British Library.

BUILDING SERVICES AND ENVIRONMENTAL ISSUES: THE BACKGROUND

S. Halliday, Building Services Research and Information Association, 1992. ISBN 0860222993.

Funded by the Department of the Environment, this is the first phase of a research project into formulating an environmental code of practice for the Building Services Industry. It aims to collate information and develop strategies that will support the building services industry in the move towards cleaner technologies. The draft code of practice is due to be drawn up during 1992 and piloted in 1993.

EMERGING ENERGY TECHNOLOGIES — IMPACTS AND POLICY IMPLICATIONS

M. Grubb et al. Royal Institute of Public Affairs, 1992. £29.50. ISBN 185521807.

This book examines the effect new energy technologies are likely to have on the energy business and on government policy. It uses analysis of historical experience and case studies to investigate the potential role of technological change in responding to environmental and other pressures.

A GUIDE TO FUTURE EC ENVIRONMENTAL POLICY MAKING

Environmental Policy Consultants, 1992. £15.00.

An examination of the impact the Maastricht Treaty is to have on EC environmental policy making and its implications for British business. It points out that environmental regulations are likely to be stricter, more speedily made and more effectively enforced, and that business should be prepared if it is to survive successfully.

FUTURE EVENTS

1992-1993 — GREEN BOOK CONVERSATIONS
Authors of environmental publications have been invited to discuss the changes they hope their books will bring about in this ongoing programme of conversations. Confirmed speakers include Dr Mayer Hillman, Des Wilson, David Pearce and Michael Grubb.
Venue: The Green College, London.
Details: Vicky Matthews. Tel: 071 730 8868.

12, 24 NOVEMBER, 1, 8 DECEMBER — IMPLEMENTING BS 7750 — ENVIRONMENTAL MANAGEMENT SYSTEMS
This series of one day seminars has been organised to answer questions about the Standard, explain the benefits of using it, to show how it can fit into existing management practices and be implemented.
Venues: Victoria Park Hotel, Wolverhampton (12 Nov.); Cardiff Moat House Hotel, Cardiff (24 Nov.); Grosvenor Hotel, Glasgow (1 Dec.); Grosvenor House Hotel, London (8 Dec.).
Details: Hawksmere Ltd. Tel: 071 824 8257.

18 NOVEMBER, 2 DECEMBER — APPLICATIONS AND AUTHORISATIONS — A PRACTICAL GUIDE
A one day conference aimed at industrialists, environmental health officers and environmental managers. It will review the procedures and information necessary to make an application for authorisation, consider the format and preparation of such an authorisation, and discuss HMIP experience in these areas over the last 18 months.
Venues: National Motorcycle Museum, Solihull (18 November), Metropole Hotel, Llandrindod Wells (2 December).
Details: White Rose Conferences. Tel: 0709 828181.

24-25 NOVEMBER — ADVANCES IN ENVIRONMENTAL AUDITING
The two day conference concentrates on the practical experience being gained across a wide range of industries.
Venue: Marriott Hotel, London W1.
Details: Katie Abberton, IBC Technical Services Ltd. Tel: 071 637 4383.

1 DECEMBER — WATER AND WASTE IN THE SOUTH EAST
Conflicts between waste disposal requirements and environmental quality aspirations are particularly intense in the South-East. This seminar will assess the contaminative risks to land and water, and consider effective strategies and likely costs in the developing framework of UK and EC legislation.
Venue: Institute of Child Health, London.
Details: NSCA. Tel: 0273 26313.

1-3 DECEMBER — HAZARDOUS WASTE MANAGEMENT: THE EUROPEAN DIMENSION — POLICY, LEGISLATION AND PRACTICE
A course aiming to provide a comparative understanding of European Community policy, regulatory requirements and operational practice in a number of european countries.
Venue: Loughborough University.
Details: Glenda Baggot, Loughborough University. Tel: 0509 222161.

7 DECEMBER — ENVIRONMENTAL ECONOMICS IN PRACTICE
The purpose of this seminar is to take stock of the scope for the application of economic instruments and to assess the possible effects of various forms of economic incentives in resource management and industrial practice.
Venue: Forte Crest Bloomsbury Hotel, London WC1.
Details: Amanda Wright, IBC Technical Services Ltd. Tel: 071 637 4383.

9 DECEMBER — ENVIRONMENTAL MANAGEMENT STRATEGIES
The EC Eco-Audit Regulation and Eco-labelling scheme will be explained, along with BS 7750, in the context of formulating and managing an environmental policy.
Venue: Le Meridien Hotal, London.
Details: European Business Seminars. Tel: 071 823 9001.

9 DECEMBER — TREATMENT AND DISPOSAL OF CHEMICAL WASTE
This course will review the current situation and indicate the direction of future policy and practice, and show how higher standards of disposal can be achieved on a cost effective basis. It is aimed primarily at chemical waste producers and researchers, local authorities, the National Rivers Authorities and HMIP.
Venue: University of Sheffield, Sheffield.
Details: Maria Elliott, University of Sheffield. Tel: 0742 768653.

16 DECEMBER — ENVIRONMENTAL MODELLING — THE NEXT 10 YEARS
A one day symposium assessing future prospects for modelling the fate and effects of chemicals in terrestrial, freshwater and marine environments.
Venue: Society of Chemical Industry, London.
Details: Linda Horsfield, SETAC-UK. Tel: 0752 222772.

9-10 FEBRUARY 1993 — CONTAMINATED LAND — POLICY, ECONOMICS, AND TECHNOLOGY
This conference will provide an up-date on developments in the assessment of liabilities arising from contaminated sites and on the current approach to contaminated land problems in Norway and the Netherlands.
Venue: Royal Lancaster Hotel, London, W2.
Details: Katie Abberton, IBC Technical Services Ltd. Tel: 071 637 4383.

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EDITORIAL

LOCAL AIR QUALITY MANAGEMENT PLANS — "LOCAL CHOICE FROM A NATIONAL MENU"

December 1992 was the anniversary of two London smogs — the notorious smog of 1952, and the 1991 smog which saw the highest levels of nitrogen dioxide ever recorded in the capital. True to form, the 1992 Christmas period produced another pollution episode as NO_2 levels exceeded the "very poor" threshold in some areas.

Modern-day winter smogs arise largely from motor vehicle pollution. The Government now accepts that the introduction of catalytic convertors and MOT testing alone will not be enough to reduce urban air pollution to meet World Health Organisation air quality guidelines. This message was reinforced by the findings of the independent Quality of Urban Air Review Group (QUARG), which published the executive summary of its report to coincide with the two smog anniversaries (see report in this issue). It seems that NO_2 smogs will be with us for the foreseeable future.

What should be the local response to the continued threat of poor air quality? In the new climate of performance indicators and Charter Marks, there is a real danger that local authorities will shift their environmental priorities towards areas where they have statutory obligations — noise, dogs, recycling and litter — at the expense of other environmental concerns. NSCA has evidence that some authorities are already considering deep cuts in their air pollution monitoring programmes. At a time when local authorities have increased the scope and sophistication of such programmes, there is an urgent need to develop a framework which places monitoring activities on a firmer footing.

Progressive local authorities are doing more than just monitoring ambient air pollution, they are seeking a role in managing local air quality. By compiling inventories of pollutant emissions and evaluating the risks they can begin to prioritise enforcement activities and re-focus planning policies. They can also build a stronger case for the powers and resources needed to protect public health and the environment.

The Department of the Environment will shortly issue its discussion paper on integrating DoE and local authority monitoring effort. NSCA wants to take the discussion one step further — to produce action plans, based on local monitoring, which will reduce air pollution to acceptable levels. We believe that Local Air Quality Management Plans should form the basis for delivering control over local air quality to locally accountable authorities. The powers would be available from a national menu of options, but the choice of control strategy would be made by those closest to the problem — a good example of subsidiarity in action.

This concept forms the basis for a NSCA Development Workshop to be held on February 24th (see this issue). We hope that everyone with an interest in air quality issues will be able to contribute to that debate.

NSCA NEWS

KEYNOTE ADDRESS

ENVIRONMENTAL PROTECTION 1992

THE STATE OF THE ENVIRONMENT

Lord Strathclyde, Under Secretary of State for
Environment and Countryside

This paper was presented at Conference by Dr. David Slater of HMIP

Introduction

This is the 59th conference of the National Society for Clean Air and Environmental Protection. That fact highlights a number of points: first, the authority and experience of the Society itself; second, the Society's considerable role in contributing to policy development; and last but not least, the fact that environmental problems are neither new, nor are they easily solved. I very much welcome conferences such as this which try to find practical solutions to the problems we face.

The theme of this conference is "Environmental Protection — Making it Happen". I am glad to have this opportunity to tell you what Government is doing to "make it happen". Your conference covers a wealth of environmental issues, and — you will be glad to know — I shall not attempt to cover them all tonight. Rather I want to concentrate on strategic initiatives by both central and local government. I will then turn to air quality and noise since I know these issues are of particular concern to the Society.

Environment White Paper: Second Annual Report

On October 1st we published the Second Year Report on the implementation of our environmental strategy. The Report describes the action we have taken over the past year and sets out our environmental priorities for the future. We have made progress on more than 440 commitments, and set another 441 continuing and new commitments. This is a rigorous and effective management system. The Government is accountable for every target and commitment.

The Report starts with an account of the Earth Summit in Brazil in June. This was the largest ever gathering of world leaders to discuss environmental issues. Among other things, it resulted in agreements on conventions on climate change, biological diversity and forest principles. The Report goes on to explain how we shall take forward the Rio agreements through our Presidency of the European Community. Our priority is to integrate environmental consideration into all aspects of Community policy.

Turning to Britain's own environment, the Report records the important steps we

have taken to improve the quality of air and water, and the treatment of waste. For example on air quality we have tough new emissions standards for a further 78 industrial processes controlled by local authorities, and an international agreement to a 30% cut in volatile organic compounds emissions by 1999.

On water quality we have continued to increase expenditure for the National Rivers Authority's pollution control operations. Recycling and the control of waste remain a priority. The "duty of care" has now been implemented, which makes anyone who has control of waste at any stage, from the point of production to the point of disposal, responsible for its safe handling.

The Second Year Report also sets out new policies for the future. These include the preparation of national plans on climate change, biological diversity and forestry to follow up the Earth Summit; the creation of a new Environment Agency to bring together the functions of the National Rivers Authority, HMIP and the waste regulatory duties of the local authorities; and a new Green Charter to set standards for local authority environmental services.

Market Instruments

The Report emphasised this Government's commitment to develop new economic, or market, instruments to improve the quality of the environment. Traditionally the main approach for influencing other people's decisions has been to pass laws or issue regulations. An extensive framework of environmental legislation has been developed in response to environmental problems, and pollution control agencies such as HMIP and the NRA have rigorously enforced environmental standards.

Of course, regulation will continue to have an important part to play in maintaining these standards — our new Environment Agency will be central to this. However, direct regulation can be complicated, slow to devise and needlessly bureaucratic. The regulatory approach to improving the environment is no longer enough. We want to make markets work for the environment as well.

Economic instruments are an inherently more flexible and cost effective way of achieving environmental goals. They can take a variety of forms. Some, such as taxes and charges, can be used to make polluters pay some or all of the hidden charges of their pollution. Others, such as deposit fund schemes can provide an incentive for consumers to behave more environmentally.

Recent reports by the OECD have found widespread use of economic instruments in other countries. In Britain we are already familiar with the higher tax rate on leaded petrol, which has brought unleaded petrol nearly half of all petrol sales.

We are considering a number of economic instruments. These include a carbon tax, to reduce CO_2 emissions and encourage energy efficiency; incentive charging to ensure that the polluters of water also bear the costs of any environmental impacts of pollution; and more means to encourage the recycling of waste.

Sustainable Development Report

Following the Earth Summit in June the UK agreed to prepare a report by the end of

1993 for the UN Sustainable Development Commission. This report will cover the British response to a wide range of topics discussed at Rio. The White Paper process provides a framework for the new report, but we would like to consult widely on the central question of how we balance the needs of the environment and the needs of economic activity. We want to hear the comments of businesses, voluntary groups and local authorities to ensure that the report reflects the views of the widest range of people in the country.

Statistical Report

Last week we published a major statistical report *"The UK Environment"*. This is the first report to collect environmental information in an easily accessible form; it brings together information from the long term statistical series and less readily available material from a variety of research programmes. We hope that this statistical report will be used widely and will inform public discussion about the quality of the environment. It will be a key document for policy makers.

Eco Audit in Local Authorities

I do not have to remind this audience of the crucial role local authorities play in the protection of our environment. Only this morning I had the pleasure of helping to launch a county-wide state of the environment report produced by Hertfordshire County Council. In recognition of these responsibilities we in central Government are collaborating with local Government on an important strategic initiative for individual authorities.

My Department and the local authority associations want to encourage as many authorities as possible to adopt a systematic approach to environmental management. The Central and Local Government Environmental Forum, which brings together Environment Ministers and senior local authority association representatives, have set up a working group to consider how environmental management in local Government can be developed.

The Working Group has commissioned research, jointly funded with the local authority associations, into local authority environmental management and audit. The approach is modelled on the European Community's proposed Eco Audit Regulation for manufacturing industry.

Participating local authorities will undertake an initial review of the environmental implications of all or part of their operations. In the light of that review the authority will then adopt an improvement programme and install a management system to ensure that commitments are carried through, and progress regularly audited. On each occasion a public statement will be required on current environmental impacts and local authority policy. These statements would also have to be independently verified.

The consultants carrying out the research project are preparing guidance covering local authority corporate activities, such as energy use, a generic guide covering all local authority services, as well as specific guides on housing and economic development services. A draft of these guides is being piloted by a number of local authorities, and my Department and the local authority associations plan to publish the final guidance next year.

I am pleased to say that there is substantial interest in this initiative within local government; many authorities have indicated their willingness to be involved on a voluntary basis. The proposed guidance should provide further encouragement to local authorities to develop auditing.

Clean Air

Now I want to turn to one of the main interests of the Society — the quality of our nation's air.

The implementation of Local Authority Air Pollution Control continues. September 30th was the deadline for industrial operators to make application for authorisation to their local authority. Tremendous work has been done on all sides to implement this new system. I congratulate in particular those of you from local authority environmental health departments for the commitment you have shown to the new tasks.

The next step for us is to review the coverage of these controls. Is the scope right? Are there any ambiguities and uncertainties which we need to resolve? We aim to issue a consultation paper on this around the turn of the year. We are therefore very grateful to the Society for the valuable information they have gathered on implementing the new system. We welcome the promise of further reports as the system evolves.

Air Quality Monitoring

Air quality monitoring and air quality standards also feature prominently in your conference programme. In the last year our urban air quality monitoring network has been expanded to six more cities, with each site measuring a record number of pollutants. Next year the network will expand again and will soon measure toxic hydrocarbons such as benzene — the first time that these will be measured anywhere in the world. We aim to extend the network to cover all our major cities by 1997.

The information that we collect is issued in the form of daily air quality bulletins. These serve two purposes; they warn people who are particularly sensitive, for example asthmatics, when pollution levels are high or going to be high; and the bulletins remind us all to help keep pollution levels down — for example by avoiding unnecessary car journeys when poor air quality is forecast. In May I launched a leaflet setting out how this could be done for summer ozone pollution, and we will be issuing a similar one this winter.

Central Government does not have a monopoly on air quality monitoring. More and more local authorities have their own monitoring programmes; both national and local interests would be well served if this monitoring was better coordinated. We hope to establish a secondary monitoring network in partnership with local authorities to complement the national picture given by our primary network. We will issue a consultation paper on how this might be done next year. I know that this is a complex task. NSCA members have invaluable experience in this area and I look forward to hearing their views on this.

Nitrogen Dioxide and Traffic Growth

Our monitoring gives us a mixed picture of progress. Industrial pollution is generally in

decline and will fall further and faster under the new controls in the *Environmental Protection Act.* But new problems are emerging too. In December 1991 our monitoring stations in London recorded the highest ever levels of nitrogen dioxide in the UK. Average concentrations of nitrogen dioxide have gone up by 35% in the five years to 1991.

Diesel vehicles are now the main source of smoke in urban areas. A range of measures to tackle pollution is in hand, from catalytic converters on cars to tighter smoke checks on buses and lorries, and lower sulphur content of diesel fuel. But every step we take on individual cars risks being negated in the longer term by increases in traffic.

We must therefore tackle the traffic problem. I am not suggesting heavy regulatory action, rather measures which will ensure that the external costs to society as well as direct costs to users — are brought to bear on transport decisions. Road pricing is one possibility and research on that is in hand. The Royal Commission on Environmental Pollution, too, has begun a major study on transport and the environment, and we look forward to its report as a major contribution to the debate.

Effects Based Targets for Air Quality

Meanwhile we need to develop better yardsticks for progress on air quality. We need to target our efforts in a more sophisticated way. We have set up a range of expert advisory bodies to help us to understand better the effects of air pollution.

By 1994 we plan to establish bandings, guidelines or targets — the precise mix we need depending on the case — for major pollutants such as benzene, carbon monoxide and particulates, and to refine the existing ones for sulphur dioxide and ground-level ozone. This will enable us to explain more clearly to the public the significance of particular levels of pollution and whether there is action they should be taking to avoid it. It will also enable us to develop the approach we favour for pollution abatement — that is to link policy more closely with the effects of pollution.

Effects-based targets for improving air quality will allow controls already in place to be fine-tuned. But they too will pose new problems for day-to-day control. We want a debate on the way that an effects-based approach might be developed. We will be issuing a discussion paper on this topic next year. I very much hope, however, that Society members with constructive thoughts to offer will not wait until then to comment.

Neighbourhood Noise

Finally I should like to explain the action we are taking to control noise pollution. The *Environmental Protection Act* has imposed a specific duty on local authorities to investigate complaints about statutory nuisances occurring in their areas. In response, many local authorities are now providing either out-of-hours or 24 hour services to deal with such complaints.

I want to make existing legislation work as effectively as possible. We have revised our guidance booklet *Bothered by Noise;* we have also published with the Home Office guidance on the control of noisy parties. This explains among other things, the powers available to environmental health officers to temporarily remove sound equipment to enforce a noise abatement notice.

Following recommendations in the *Noise Review*, we have drawn up and consulted upon proposals to strengthen the law on noise. Proposals include extending the statutory nuisance provisions of the *Environmental Protection Act* to the highway and giving local authorities stronger powers to control noise nuisance from loudspeakers in the street and audible intruder alarms.

Legislation is only part of the answer to noise however — particularly neighbourhood noise. That is why we also want to encourage more responsible attitudes towards noise. To this end, we have been contributing towards the running of a noise counselling and mediation scheme in Bristol. Another scheme in South London is also due to be funded shortly. Mediation schemes are available to anyone suffering from noise and represent a new approach to resolving problems between neighbours without the need for expensive court action.

We also grant-aided a project to increase noise awareness among schoolchildren in Nottingham, conducted by the Royal National Institute for Deaf People. The results showed that schoolchildren are receptive to this subject and have a genuine concern about pollution in general and the fact that noise could be unknowingly damaging their bodies. We have also funded a pilot neighbourhood noise awareness scheme in Forest Hill, south east London, from which a useful noise awareness code resulted.

The Society participated in promoting August as "Noise Awareness Month". The campaign focused on radio stations and promoted the message "Turn it on — but keep it low". I presented the award to the three most noise-friendly radio stations at the end of a very effective promotional month. Noise is one of the subjects you will be addressing later on in the week. I can assure you it is a polllution problem we in Government take very seriously.

Conclusion

In conclusion I can assure you that this Government is second to none in its commitment to environmental protection. We shall continue to seek ways to improve and protect the quality of our environment. I am sure that this conference will be able to give us plenty of ideas for further action, and I wish it every success.

CONFERENCE REPORT 1992

NSCA's 1992 Environmental Protection Conference and Exhibition drew one of the highest attendances in recent years. Nearly four hundred delegates enjoyed a wide-ranging and comprehensive programme at the Bournemouth International Centre. Keynote speeches on the implementation of the *Environmental Protection Act* were given by Dr David Slater of HMIP, Graham Jukes of IEHO, John Cridland of CBI and Maurice Frankel of the Campaign for Freedom of Information.

The conference went on to review energy and the environment, waste management, noise and a range of situation reports. A new departure saw an informal discussion session on waste disposal issues which was well attended and formed the basis for lively debate. Many delegates felt that "the best was kept until last", as the final session addressed questions of air quality monitoring and human health implications, with contributions from Dr Owen Harrop of Aspinwalls, Prof Roy Harrison of Birmingham University and Dr Bob Maynard of the Department of Health.

Analysis of the conference questionnaire revealed a high degree of satisfaction with the programme, and with the venue, which comfortably accommodated both the conference and exhibition. The new loose-leaf folder for conference proceedings also proved popular; most papers and abstracts were available at conference, and delegates will receive any remaining papers in the new year to add to their conference folder. This year Environmental Protection 1993 returns 'home' to Brighton; we welcome any suggestions from members about subjects which they would like to be featured on the programme.

ANNUAL GENERAL MEETING

The outgoing Chairman of Council gave a wide ranging report to the AGM on her year of office. Councillor Mrs. Jane Inglefield paid tribute to the vigour and diversity of activities in the Divisions which contribute so much to the strength of the Society. She also thanked honorary officers of the Council and Divisions, members and staff for their support throughout the year.

Councillor Inglefield went on to evaluate the contribution which the Society was making towards achievement of a comprehensive system for managing air quality in the UK within the context of a sustainable economy and having regard for protection of all environmental media. She called for action to:

— improve our knowledge of ambient air quality throughout the country
— better define standards and guidelines for air quality which were rational in relation to goals for health conservation and economic and social development
— secure the necessary improvements in key areas of the economy including industry, transport, agriculture and housing.

Councillor Inglefield's report reviewed the contributions which the Society is making to secure the action which she called for. The full text is available on request from the Office and will be included in the *1993 Members Handbook* which will be circulated in March.

The Baroness Platt of Writtle was elected President of the Society for a further term of office. The Rt. Hon. the Earl of Cranbrook and Mr. John Edmonds were elected to further terms as Vice Presidents. Mr. Robert Jones MP Chairman of the House of Commons Environment Select Committee, the Rt. Hon. Lord Nathan, President of the UK Environmental Law Association and Past President of the Society and Mr. J. Speirs, Managing Director, Norsk Hydro UK plc were elected Vice Presidents. The

meeting recorded the Society's appreciation of the expertise and support which our President, Past Presidents and Vice Presidents bring to the Society.

Three longstanding members of the Society were elected Honorary members. Mrs. E.M.L. Naylor is the Immediate Past President of the South East Division and has for many years had a pervasive and influential role in home economics and promotion of rational solid fuel use in the home. Councillor Len Poole who has the unique distinction of being both a Past President of the Society and Chairman of Council as well as making valued contributions to the Society, local government, environmental protection and public life both in the North and nationally. Mr. Bill F. Snow is a Past Chairman of Council, the North West Division and the Parliamentary and Local Government Committee who had a distinguished career in local government serving for many years as Chief Environmental Health Officer and then Assistant Director of Technical Services for Warrington BC. The Society extends its thanks to all of them for their generosity, counsel and hard work which has contributed so much to its success.

Cllr. Mrs. Jane Inglefield, Immediate Past Chairman of Council, congratulates Prof. Jim Harrison on his election as Chairman of Council

WATER AND WASTE IN THE SOUTH EAST — Environmental Challenges for the Nineties

Keynote Address at NSCA South East Division Seminar, 1 December 1992

Lord Lewis of Newnham, Chairman of the Royal Commission on Environmental Pollution 1985-1992.

Despite all that has been done in recent years to improve the protection of the environment, there are still many problems in disposing of waste — whether to air, land or water.

Until recently I chaired the Royal Commission on Environmental Pollution which, as most of you will know, is an independent body set up to provide advice over the whole area of environmental protection. The Commission published its 16th report earlier this year on Freshwater Quality. This was a wide ranging study in which we considered several of the subjects which will be discussed today — including groundwater, the threats posed by contaminated land, and agricultural pollution. I would like to refer to some of the issues which we studied in preparing that report as a way of setting the scene for what seem to me to be the key challenges for the nineties.

The first and most obvious thing to strike us was that, although a good deal of attention has been paid to improving fresh water quality over the years, substantial pollution has still taken place. The Royal Commission's first report, in 1971, drew attention to water pollution by sewage, detergents and industrial discharges. Nevertheless, these problems continue. Following the 1990 river quality survey, the NRA concluded that the improvements in river quality which had been observed in the 20 years up to 1980 had been partially reversed and that there had indeed been a small deterioration in the quality of fresh water in England and Wales during the previous decade.

I should say that we looked in some detail at the approach used in the quinquennial surveys to assess the quality of water. Many of you will be familiar with the criticisms of the National Water Council's classification scheme on which the surveys are based and of the statistical basis. These have been amply described both in our own report and by the NRA. Our view was that national surveys of river quality are useful in providing a general picture of the state of the aquatic environment. The three chemical measures of pollution on which the NWC scheme concentrates provide a good indication of organic pollution from certain sources such as sewage and animal wastes but they do not provide an adequate overall picture. And the published results contain a substantial element of subjective adjustment which reduces the credibility of the results and their consistency from region to region and survey to survey. We consider that the best method of assessment is by monitoring the aquatic biota and we recommended that, in future, biological surveys should form the basis of the published reports. These biological surveys should be supplemented by publishing chemical data which would help to explain trends in the biological results. They would also provide a national picture of a much wider selection of chemical pollutants than is at present generally available. I am glad to see that the NRA has proposed, following consultation, that the new system of statu-

tory water quality objectives should include a general quality classification assessment which would report separately not only the biological and chemical states of English and Welsh rivers but also their aesthetic quality and, very important, their nutrient status.

Although there is considerable scope to improve the monitoring of river water quality, it is at least monitored and the results are reported. In contrast, there is no national monitoring scheme for groundwaters. We concluded that it would be desirable to develop a national network of groundwater observation points so that a representative picture could be obtained of the nation's groundwater resources. This could and should be done without sinking a large number of new boreholes (which could themselves affect the quality of the groundwater under observation).

Groundwater is vulnerable to pollution from both diffuse and point sources and we received evidence of extensive pollution of some aquifers, especially under urban and industrial areas. Solvents appear to have caused particular problems. This seems to be an area which has suffered from some neglect in the past and I wonder whether there may be a tendency among non-specialists to over-estimate the extent to which pollutants can be made harmless as they pass through the soil into aquifers. In fact, there is only a limited capacity for self-purification and, since it is extremely difficult to decontaminate aquifers, it is important to eliminate potential sources of groundwater pollution. I believe that better use could be made of the powers that exist to protect groundwater and in particular to designate water protection zones. The NRA has made proposals to improve groundwater protection and the European Community is also planning new measures.

Contaminated land is only one potential threat to groundwater. Another, which has not received the attention it might, is leachate production in landfill sites. This is a subject which has long concerned the Royal Commission. In its 11th report, the Commission warned that reliance should never be placed on the long term containment of leachate but that it should be extracted and processed so that containment failure could not lead to the pollution of an aquifer. We continue to attach the highest importance to this. We recommended in the 16th report that monitoring of leachate production should be required for all landfill sites. The results of such monitoring are also of critical importance in determining whether a pollution threat continues to exist from closed landfills.

Leachate does not simply threaten groundwater but can seep into ditches and rivers. Other types of contaminated land can also severely pollute rivers and streams. For example, when we visited the River Tame in the West Midlands we were told that about six tonnes a year of copper and 15 tonnes of nickel leach into the river from two former waste sites near Walsall. Abandoned mines can also cause severe pollution — as was all too obvious when the Wheal Jane mine was closed. We recommended that all consents for operational mines should be reviewed to ensure that, where possible, conditions are imposed requiring action to be taken in the event of closure to safeguard water from pollution. This recommendation has acquired a certain unfortunate topicality which we had not envisaged. Action should also be taken to reduce the risk of pollution from mines which have already been abandoned.

Farm wastes, mostly coming from industrial livestock units, are widely seen as a major source of farm pollution. The Royal Commission's view is that intensive livestock undertakings are essentially industrial activities and it has recommended that farms operating such units should be subject to a system of authorisation. Approval to operate would be given only if the farm had adequate waste disposal arrangements. There is, however, a positive side to these problems. Much slurry is already used beneficially to improve the fertility of agricultural land and it seems likely that there is scope to increase the amount. We were impressed by the constructive attitude of Danish agriculture where slurry is looked on less as a waste disposal problem than as a potential resource and ways are sought of using it beneficially. This might include converting slurry into fertilizer and into gas (which can be used for heating) and we believe that the Government should take the lead in investigating how such developments could be encouraged.

In many ways, point discharges of effluent from factories and sewage works are the most obvious sources of water pollution. We were disappointed that more had not been done to improve the performance of sewage treatment works and I notice from this year's figures that sewage still remains a major source of fresh water pollution. Despite the difficulties, a far more rigorous approach is still needed to preventing pollution from sewage treatment works — not least those small works with descriptive consents — and from storm overflows. As to industrial discharges, we were struck by the fact that many complex discharges have rudimentary consents controlling no more than the traditional sanitary determinands. The NRA's review of consents has a very considerable task ahead of it in finding satisfactory ways of coping with these complex discharges.

Water quality can of course be affected by reductions in the flow of rivers as well as by inputs of pollutants and this has been a particular problem in the South East during the droughts of the last few years. Abstraction and discharge controls must be exercised in an integrated way in order to ensure that the desired quality of water is achieved. Measures may also be needed to augment supplies or to reduce the need to abstract water and both the NRA and the Government have published consultation papers on these issues, which will clearly be with us for a considerable time to come.

We devoted part of our study to the economic analysis of water pollution and to considering whether market mechanisms could be used to control pollution. This is a subject which has come into increasing prominence in the last decade and I have no doubt that it will assume greater importance in the '90s. For our part, we did not consider it acceptable to introduce a system of market mechanisms which would not provide at least as much confidence that water quality standards would be achieved as under the present system of regulation. We therefore recommended a system of charges on point sources of effluent, modelled on systems operating in Germany and the Netherlands, which would reinforce the regulatory system to make sure that it works as cost-effectively as possible. This would give dischargers an incentive to improve the quality of their effluents. It could also help to raise funds to pay for environmental improvements. No doubt there is scope for similar approaches to controlling other wastes.

From this brief survey I should like to draw some lessons for the nineties and beyond.

Firstly, I have laid a good deal of emphasis on the need for thorough, accurate monitoring of the environment and of the pollutants which we dispose of in it. There are two reasons for this. Pollution control is not cheap and it is essential to understand the processes which are going on around us if we are to hope to develop sensible priorities to tackle the problems of waste.

Moreover the management of scarce resources may involve the resolution of conflicts of interest, as we saw in studying water. In order to apply the value judgements which this often entails, a framework is needed which incorporates rational criteria, public involvement and proper accountability. Good knowledge of the environmental effects of actions is an essential part of this process.

Secondly, I have mentioned the cross-media effects of some kinds of pollution — the ability of land pollution to affect water, for example. The Royal Commission has long been concerned to look at the environment as a whole and it explored the concept of the best practicable environmental option in its 12th report. The measures introduced in the *Environmental Protection Act 1990* were a useful step towards achieving BPEO for a limited but important range of policies. I hope that we may see a more integrated approach to the environment in the operation of the environment agencies in England and Wales and in Scotland once they have been established.

It is important, too, that the wider environmental effects of land use and changes in land use should not be overlooked. In the 16th report we noted that changes in land use could have significant effects on fresh water quality and that local authorities' development plans should take fully into account the need to protect water resources. But the point is not restricted simply to water quality and it is one which needs to be borne in mind both in drawing up structure plans and in deciding on development applications. There is also considerable scope for wider use of environmental impact assessments.

Thirdly, in our use of the environment we must aim to meet the needs of the present without compromising the ability of future generations to meet their own needs. The maintenance of water quality is a key test of our commitment to this concept of sustainability. If we cannot pass on to future generations at least the same range of options for the use of water that we enjoy, and preferably a greater range, then we will have failed the test. I have already referred to several of the policy directions we need for achieving a sustainable use of environmental resources. They include improved monitoring, better planning and management of resources, the need to adopt a precautionary approach to pollution control in the face of uncertainty and better economic analysis of environmental protection so that the benefits — especially those to future generations — can be set against the costs.

Finally, the environment has an ability to assimilate and process wastes. There is a longstanding view, particularly prevalent in relation to river management, that it is acceptable and sensible to make use of this assimilative capacity. I believe that a new approach is required and that progressively less reliance should be placed on the environment as a mechanism for processing wastes.

The question of how much waste can be disposed of to the environment without adverse effects should be preceded by asking how far the pollution from a process can be reduced. This means, in the water environment, supplementing the water quality objectives based approach with technology-based emission limits, as HMIP already does for scheduled processes. Water quality objectives should be progressively tightened to reflect increasingly ambitious targets for water quality. This process would enable water quality to benefit from advances in technology to reduce pollution and would provide a means of responding to increases in the value the public places on the environment and its protection for future generations.

The changes of approach which I have outlined will not all be easy, particularly in a time of recession. But I believe that they are essential if we are to ensure the sustainable use of the environment for the benefit of future generations. I hope that today's seminar will be an important step forward in this process.

9TH WORLD CLEAN AIR CONGRESS, MONTREAL

Last August nearly 700 delegates representing some 38 countries throughout the world convened in Montreal, Canada for the 9th World Clean Air Congress. NSCA was represented by Dr. Tom Crossett and Geof Kaufman, NSCA Deputy Chairman presented a paper entitled *"The Chemstar Story — The Aftermath of a Chemical Explosion"*. The Congress, organised by the Air & Waste Management Association for the International Union of Air Pollution Prevention and Environmental Protection Associations (IUAPPA), was honoured by the presence of the Governor General of Canada, His Excellency, Ramon John Hnatyshyn at the opening ceremony.

In his opening address, the Governor General noted the significance of the IUAPPA Congress taking place so soon after the United Nations Conference on Environment and Development (UNCED). He felt that Rio made it clear that developing countries want what developed countries have: "prosperous lives filled with purpose and meaning, room to create and enjoy cultural activities, celebrate their heritage, and their beliefs." He said that as long as the environment and the economy were viewed as being in conflict, these goals seemed forever beyond reach. The Governor General then spoke about sustainable development as the answer for the future because it offers a promise of prosperity to those who have little or nothing, while guarding important natural resources.

He spoke about IUAPPA's 30 years of pioneering work in the field of air quality, calling the Union's members "leaders in a form of consensus-building that has had an impact on environmental attitudes".

In closing, he bid the delegates to continue to strengthen the record of achievements by individual organisation members and by the Union as a whole. He said that continuing consultation by all sectors of society will be a major factor in assuring improved air quality for future generations. He said it was his pleasure, on behalf of all Canadians, to welcome the delegates to Canada, and wish them success at the Congress.

In welcoming delegates to Canada, Steve Hart, outgoing President of IUAPPA noted the growth in the number of members of IUAPPA since the last Congress — from 28 to 34 with a number of applications pending. Among the new members of IUAPPA were organisations representing Hong Kong, Austria, Croatia, Kenya, Turkey and Romania. He told the audience that the IUAPPA Declaration on Pollution Prevention (see *Clean Air, Autumn 1991*) to the UN had been used in Rio by many countries to develop their national positions on this issue. He thanked NSCA, without which, he said, nothing would be possible.

Steve Hart spoke about a theme he has heard in many places throughout the years: "We need help to help ourselves, rather than have an outside solution imposed on us." Developing nations want financial aid to help establish their own institutions. To this end, Mr. Hart stressed the importance of special co-operation in environmental management in order to protect basic resources. He called for a push for sustainable development around the world. He also stressed the need for an increase in technical exchange among not-for-profit associations.

The IUAPPA Executive Committee now has representatives from all continents. He assured the delegates that the potential of IUAPPA was enormous; the Union will become even more effective in the future. Plans over the next three years call for the scope of the organisation to grow and change. IUAPPA's development depends only on the imagination and dedication of those who serve the Union. He recommended that the Union tread softly while providing help to less developed countries. He finished by saying that IUAPPA and its member organisations, through their combined strength, can make a positive, cost-effective contribution to resolving some of the enormous international issues which confront those dealing with economic and environmental problems.

A plenary session addressed the place of environmental protection in sustainable development, and specifically the significant relationship between environmental quality and economic prosperity.

The central theme of the Congress was "Towards the Year 2000: Critical Issues in the Global Environment". Close to 400 papers were presented by speakers from more than 38 countries. Technical sessions included such topics as: ozone, atmospheric deposition, clean coal and alternative fuels, air pollution control, indoor air, atmospheric chemistry, health and ecological effects, atmospheric measurements, toxics, odours, risk assessment, visibility and policy and implementation approaches.

All the papers are available in the Congress Proceedings, a seven volume set. The proceedings are available as a set or by volume from the Air & Waste Management Association, PO Box 2861, Pittsburgh, PA 1530 USA; (412) 232-3444, Fax (412) 232-3450.

This report on the Congress is based on a report from Alyssa Rector, Assistant Editor of the Journal of the AWMA, prepared for the IUAPPA Newsletter. For a full copy of her report, please write to the Editor of the IUAPPA Newsletter at 136 North Street, Brighton BN1 1RG.

The 10th World Clean Air Congress will be held in Finland, 29 May-2 June 1995. Further details are available from Ms Merja Tolvanen, Finnish Air Pollution Prevention Society, Box 335, SF-00131 Helsinki.

NSCA SCOTTISH DIVISION SEMINAR
AIR POLLUTION MONITORING AND THE DUTY OF CARE

This seminar, held on 22 September 1992 in Perth, attracted over 100 delegates from a wide range of disciplines. The papers presented covered a variety of topical air pollution and waste issues.

UK Urban Air Quality Monitoring Network

Steve Moorcroft of Rendel Science & Environment looked at the expansion of the air pollution monitoring network in the UK as set out in the Government White Paper on the environment. Rendel Science and Environment manage the network.

At present local site operators are local authority environmental health departments, Envirotechnology provide a site servicing unit, and Warren Spring Laboratory has been appointed to write instruction manuals and to ensure quality control of the data. The Enhanced Urban Network provides for monitoring of SO_2, NO_2, O_3 and CO and particulates (PM_{10}). Sites are carefully selected to be broadly representative of general urban air quality in areas not greatly affected by single sources and in areas where people spend a reasonable amount of time.

Mr. Moorcroft explained that it is essential to present air quality data in a simplified form that the public can understand. Air quality is currently described in terms of four bands for SO_2, NO_2 and O_3. Criteria for CO and particulates are being developed.

Air Quality Monitoring in Glasgow

Crawford Morgan of City of Glasgow District Council discussed the air pollution monitoring which is carried out by the Environmental Health Department in Glasgow. He looked at monitoring equipment used, along with the location of monitoring sites and the pollutants on which information is obtained, including, smoke, sulphur dioxide, nitrogen oxides, heavy metals and carbon monoxide.

Relevant air quality directives and regulations were discussed alongside examples of monitoring data. Trends in Glasgow's air quality were highlighted. Glasgow District Council has recently established an on-line link to the Department of the Environment/Warren Spring Laboratory (WSL) air quality network.

The presentation concluded with a brief mention of possible future developments in Glasgow's air quality monitoring system. These include involvement in a forthcoming WSL ten year UK wide NO_2 diffusion tube study, the possibility of establishing an Enhanced Urban Network site in Glasgow, provision of pollution forecasts to the media, improvement to site maintenance and quality control and improved data manipulation and reporting.

Monitoring Emissions of Pollutants at Source

David Walker of Warren Spring Laboratory introduced the HMIPI Manual which he expected to be published around the end of 1992. The manual explains the basic principles of monitoring, why pollution needs to be monitored and various pollutants which

are commonly monitored. The need to obtain representative samples is discussed, along with the types of monitors available and the differences between extractive and cross-duct monitoring.

Mr. Walker explained that there were only a few recognised UK standards for non-continuous monitoring, and none for continuous monitoring, although these are being developed. The manual also looks at legislation and quality assurance and control.

Implications of Implementation of Part I of the Environmental Protection Act 1990

NIVES Consulting Group have been involved in testing emissions from clinical waste incinerators, crematoria and wood waste incinerators. Peter Horan of NIVES explained that almost all clinical waste incinerators and crematoria will need to be replaced as they are incapable of being upgraded to fulfill BATNEEC standards, as specified in relevant process guidance notes. He set out the emission standards for crematoria and incinerators and looked at the experiences of process operators in meeting the standards which have been set.

Mr. Horan discussed in detail the experience of his company in monitoring emissions from crematoria. He also considered the draft report recently published by Warren Spring Laboratory for the calculation of chimney heights. He stated that it is not usually necessary to submit monitoring results along with an application for an authorisation, although the local authority would normally require such testing as part of the authorisation, and explained that applicants for authorisation must consider carefully the conditions of the authorisation and discuss the implications of these with the local authority. The need for staff training of operators was highlighted.

Waste in Scotland — Duty of Care and Beyond

Bob Perrett of the Scottish Office Environment Department examined the 'duty of care' as defined by the *Environmental Protection Act 1990.* He also mentioned the *Environmental (Duty of Care) Regulations,* which deal with documentation procedures, and the code of practice on the duty of care.

He explained that this new 'duty' was unique as it makes not only waste disposers, but all those in the waste chain, such as carriers and producers, responsible for waste. This means that duty of care is primarily about self regulation — with the benefit of making all those in the waste chain more aware of their responsibilities.

Mr. Perrett suggested that practical problems being posed by the duty of care were limited. He also stated it should help to track down perpetrators of waste offences and the threat of heavy fines and loss of waste carriers registration should be effective against small companies.

He went on to explain that duty of care was only part of a wider package of new waste legislation and referred to the recently issued waste consultation papers, with the new package of waste measures due to be introduced from April 1993.

Duty of Care — A Practical Approach to Compliance

Alexander Peckham of the Centre for Environment and Business in Scotland high-

lighted various practical aspects of the implementation of the duty of care under recent legislation. The need to identify and quantify waste streams was discussed, and the need to ensure that waste is safely handled and stored, along with waste transfer and record keeping.

Mr. Peckham highlighted the fact that waste collection, transfer and disposal costs will go up as a result of new waste legislation. He looked at existing or forthcoming EC directives on landfilling of wastes, strict civil liability, waste packaging and the Eco-labelling Regulation and discussed the means and benefits of waste minimisation.

Duty of Care — A Waste Manager's Perspective

John Harris of Shanks & McEwan (Northern) Ltd introduced his presentation by explaining the various inadequacies of existing waste disposal site licence provisions. He explained the effect of duty of care on his company. This has required a change to existing systems and the introduction of new ones, including record keeping, additional training and more waste inspections.

Mr. Harris advocated a reasonable, equitable, but vigorous enforcement regime, both for duty of care and waste management licensing.

FUEL AND ENERGY POLICY WORKING GROUP

Energy production, transformation and use is an essential feature of modern life, and one of the main engines of development. However, the environmental impact of our current use of energy sources and services is significant, and questions are being raised about its sustainability. This is the subject of increasing national and international debate, and the Society wishes to review its own policies in this regard to ensure that they are realistic and informed. Consequently, the Technical Committee has formed a small Working Group with the following terms of reference:

> To advise the Technical Committee on issues in relation to the sustainable use of energy and its environmental impact, and on policy measures for bringing about desired environmental improvements.

The membership of the Group is: Dr. K. Gregory, Hoskyns Consulting, Chairman; Professor J.S. Harrison, Chairman of the Council and Consultant to British Coal; Mr. J.H. Chesshire, Science Policy Research Unit, University of Sussex. The Secretary General will be Secretary to the Group.

The Group wishes to receive the views of a wide variety of interests and organisations and would welcome especially those of members, which should be sent to Tom Crossett at the Brighton Office as soon as possible.

NSCA VIEWS

IMPLEMENTATION OF THE ENVIRONMENTAL PROTECTION ACT 1990

The Second NSCA/AMA Survey

In collaboration with the Association of Metropolitan Authorities, NSCA has undertaken a second survey of authorities in England and Wales to assess progress in implementation of Part I of the *Environmental Protection Act* (see *Clean Air* Vol 22, No. 2).

The survey was undertaken during October 1992, at the end of the Block Three application period. NSCA and AMA would like to thank all local authorities who responded.

Total no. District Councils responding	**224**
Total no. District Councils	**296**
Return Rate	**75.7%**
Total no. Metropolitan Authorities responding	**63**
Total no. Metropolitan Authorities	**69**
Return Rate	**92.5%**
Total no. Authorities responding	**287**
Total no. Authorities	**365**
Return Rate	**78.6%**

PROCESS APPLICATIONS AND AUTHORISATIONS

As at 1st October 1992:

Block One Processes	**Districts**	**Mets**	**Total**
Number of duly made applications received:	1934	828	2762
Number of authorisations issued:	1117	485	1602
Number of upgrading programmes submitted:	64	50	114
Estimate of total number of Block 1 processes:	2094	968	3062
Average no. Block 1 processes per Authority	9.3	15.3	10.7

Block Two Processes

Number of duly made applications received:	2084	1106	3190
Number of authorisations issued:	187	91	278
Estimate of total number of Block 2 processes:	2112	1209	3321
Average no. Block 2 processes per Authority	9.4	19.2	11.6

Block Three Processes

Number of duly made applications received:	1452	963	2415
Number of authorisations issued:	22	5	27
Estimate of total number of Block 3 processes:	2161	1223	3384
Average no. Block 3 processes per Authority	9.6	19.4	11.8

Estimated Total Number of Part B Processes in England & Wales

Districts	8377
Metropolitan	3719
Total	12096

ADEQUACY OF INFORMATION

What proportion of initial applications have been returned as not duly made, because of inadequate information:

a.	all	4
b.	most	11
c.	about half	22
d.	few	167
e.	none	81
	not known	2

Comments

Although only a small proportion of applications were returned, many authorities report consultation beforehand was necessary and some said a lenient attitude in accepting late applications was necessary to avoid returns.

EXPERIENCE IN OPERATION

For your authority:

Overall staff levels for EPA Part I air pollution control tasks are proving:

a.	more than adequate	5
b.	adequate	97
c.	inadequate, but able to cope	159
d.	inadequate, unable to cope	26

The level of staff technical expertise is considered:

a.	adequate	203
b.	inadequate	83
	not known	1

Provision of central guidance has been:

a.	good	119
b.	poor	165
c.	not known	3

Has adequate training been available for your staff?

a.	yes	128
b.	no	154
c.	not known	5

Would you make more use of training courses?

a.	yes	265
b.	no	13
c.	not known	8

Have you employed outside consultants in the authorisation procedure?

a.	yes	28
b.	no	258
c.	not known	2

If no, would you consider using consultants in the future?

a.	yes	110
b.	no	162
	not known	15

Comments

Most authorities were coping, although few have the resources to identify operators who have failed to apply. Small authorities in particular are finding that they have limited expertise with regard to complex processes.

COST RECOVERY

In your opinion:

To cover the costs involved, the 1992/3 initial application fee of £900 is considered:

a.	more than adequate	9
b.	adequate	185
c.	inadequate	90
d.	not known	3

The 1992/3 annual subsistence fee of £550 is considered:

a.	more than adequate	15
b.	adequate	203
c.	inadequate	66
d.	not known	3

Do you think the fee structure should be:

a.	maintained as at present	37
b.	related to complexity of process	157
c.	related to size of company	35
	a combination of b and c	55
	not known	2

Comments
Main concerns on the charging structure were that smaller processes were failing to apply, avoiding application by altering their process, contracting out or being put out of business as they cannot afford the fee. Therefore a charging structure, relating the fee to the size and complexity of processes, was felt to be necessary by many to ensure that the polluter pays principle is properly applied.

PROSECUTIONS FOR FAILURE TO APPLY

Number of prosecutions:

a.	pending	40
b.	proved	5
c.	dismissed	2

Please give details of any fines and costs:

Total Fines:	£4475	Average Fine:	£895
Total Costs:	£879.32	Average Costs:	£175.86

Formal action for breach of conditions:

a.	Improvement notices served	14
b.	Prohibition notices served	1
c.	Other action	28

Comments
Several authorities reported serving section 19 notices and/or taking informal action — writing warning letters. One authority had served 246 section 19 notices since 1.4.92.

While the quality of guidance from the DoE was felt to be good, it has generally come too late, causing confusion and embarrassment. AQ12 was mentioned by many. The *IEHO Environmental Protection Bulletin* was welcomed. More practical information is needed — technical guidance on control technologies is felt to be necessary, along with information on suppliers of abatement equipment. PG notes are often too vague. It was felt that adequate opportunities for training are not available.

ACCESS TO INFORMATION

In your experience, are the public registers of applications and authorisations:

		by the Public	by Business
a.	well used	1	7
b.	little used	167	183
c.	not used	120	97

Comments
Registers are mainly being used by businesses, either to find out how to apply for authorisation or for commercial purposes. Greater publicity on availability of information is needed.

ANALYSIS

Our data shows a considerable amount of Block One authorisations have yet to be issued, although a proportion of these are likely to be waste oil burners and still within

the time limit. Block One processes should have applied for authorisation by 30.9.91, and local authorities then had a year (or 18 months for waste oil burners) to issue authorisations. From our estimate of the total number of Block One processes, only about half have been authorised so far, and a very low number of upgrading programmes have been submitted — less than 4% of the total.

Clearly some industries have been slow to apply and some local authorities slow to authorise. Although a combination of slow application and slow authorisation would allow some waste oil burners to remain unauthorised on 30.9.92, overall the slow progress on Block One authorisation and subsequent upgrading programmes gives cause for concern. Many processes must by now be breaking the law by operating without authorisation, and at least some have failed to produce upgrading plans on time. A growing number of prosecutions for failure to apply suggests that some local authorities are taking a tougher line; the onus to apply rests with process operators, and prosecutions may encourage others to apply.

Our estimate of a total number of around 12,100 processes compares reasonably well with our previous survey. Again this must be regarded as an underestimate; many local authority estimates of processes in their areas were "x-plus" and most authorities do not have the resources to mount "seek and find" operations to root out dilatory process operators.

Sixty four per cent of respondents consider staffing levels inadequate, with 9% unable to cope. This represents a slight reduction on the previous survey. Staff technical expertise was deemed inadequate by 29%. According to 54% training availability has been inadequate and 92% would make more use of training courses.

These responses are difficult to reconcile with the fact that a majority of local authorities appear happy with the adequacy of the charging system. 31% considered the application fee inadequate and 23% considered the subsistence fee inadequate — fewer than in our previous survey. Yet with a majority of respondents suffering from inadequate staffing and training, it is clear that shortage of resources remains an important issue.

The desire for more resources may be tempered with a realisation that staffing levels are unlikely to be increased in the current climate of financial stringency, and with the concern that increased charges could impact on local industry. Many respondents comment on the impact of charging, and 86% would like the fee structure to be changed, mainly to reflect the complexity of the process. This view has persisted since the implementation of the new legislation, but it has proved impossible to agree an effective and equitable mechanism. We suggest that IPLA might establish a small working group to review the options and make recommendations.

NSCA STRAW & STUBBLE BURNING SURVEY 1992

The 1992 season marked the end of the burning of the majority of crop residues. NSCA continues to monitor the situation, and will carry out a survey in 1993 to assess the effectiveness of the ban. This summer had a dry start, with wet conditions during much of the burning season.

Existing Controls

The Crop Residues (Restrictions on Burning) (No 2) Regulations 1991

These regulations came into force on 12 July 1991. They apply to cereal straw, cereal stubble, field beans, linseed, oil seed rape and peas. Under the regulations farmers must: avoid burning at weekends/bank holidays, comply with fire-break requirements, notify authorities of burning and provide supervision and firefighting equipment. The 1991 regulations do not apply to Scottish authorities.

The Ban

In November 1992 MAFF issued a consultation paper on the proposed burning controls (NSCA comments follow this report). It is currently proposed that the following minor crops will be exempt: herbage seeds, reeds, lavender, hops and potato haulms. Linseed should be exempt for a further three years, at which time the situation will be reviewed to see if practicable alternatives have been found. Burning small quantities of straw from broken bales and waste straw from stacks will be allowed — subject to controls on quantity. Discretionary lifting of restrictions for cereal crops where soil and climatic factors make incorporation impracticable are still under consideration — these may be granted limited to specific crop residues and specific geographical areas for specified periods. Exempted burning will be subject to 1991 regulations. A final decision on these provisions will be made in time to notify farmers for the 1993 harvest.

Scotland

There is currently no legislation controlling crop residue burning in Scotland.

RESULTS

All UK local authorities were sent a survey form.

Results for 1991 are reproduced for comparative purposes for some questions, results of the 1992 survey are in bold.

Total no returns:	**1992**	1991
Authorities providing information	**113**	159
Nil returns	**222**	138

(Local authorities where straw/stubble burning is not a problem)

Overview

1. Is it your impression that the situation this year was:	
a. much worse than last year	**0**
b. slightly worse than last year	**5**
c. about the same as last year	**36**
d. slightly better than last year	**39**
e. much better than last year	**33**

Comment: The majority of authorities noted an improvement in the situation.

2. If you noted any change, was this due to: (tick more than one if necessary)	
a. weather conditions less favourable to burning	**39**
b. weather conditions more favourable to burning	**2**
c. improved attitude of farmers	**48**
d. worsened attitude of farmers	**0**
e. effective enforcement of regulations by your authority	**8**
f. ineffective enforcement of regulations by your authority	**0**
g. other (please state)	**0**

Thirty-seven authorities did not note any change

Comment: Attitudes of farmers are felt to have improved in preparation for the ban. Weather conditions also played a part as the end of the summer was very wet.

Observation of regulations	**1992**	1991
3. Were there any problems with:		
a. firebreak requirements	**19**	30
b. fire supervision	**15**	21
c. ash incorporation	**10**	22
d. notification of relevant authorities	**39**	57
e. burning in high winds	**27**	34
f. burning after sunset/at weekends	**7**	16
g. any other requirements	**1**	7

Forty-eight authorities experienced no problems

Comment: As ever non notification and burning in unsuitable conditions presented the main problems. A number of authorities with a low level of complaint felt unable to comment as they had insufficient resources to monitor the situation.

Enforcement of regulations	**1992**	1991
4. Were there any problems with:		
a. insufficient staff for surveillance	**45**	67
b. gaining evidence for prosecutions	**13**	22
c. locating burns and gaining access	**23**	30
d. assessing size of firebreaks	**2**	4
e. enforcing ash incorporation period	**3**	4
f. any other aspect	**0**	5

Fifty-three local authorities experienced no problems

Comment: Inadequate staffing and locating burns presented the main problems.

Complaints		**1992**	1991
5. Did you receive any complaints?	yes	**109**	133
	no	**4**	26
6. If Yes, how many related to:			
a. smoke/smut nuisance		**319**	939
b. reduced visibility on roads		**41**	45
c. effects on human health		**31**	71
d. threat/damage to property		**18**	37
e. threat/damage to wildlife and habitats		**13**	16
f. any other aspects?		**8**	45

Comment: The overall number of complaints dropped by about one third.

Fire brigade involvement

7. To your knowledge was the local fire brigade called out to any straw/stubble burning incident?	yes	**40**	55
	no	**68**	96
8. If Yes, on how many occasions?		**154**	339

Comment: The number of fire brigade call outs halved, but in view of the wet weather and the overall drop in the level of burning, it is still fairly significant.

Prosecutions

9. Do you intend to prosecute for any breach of the regulations in 1992?	yes	**11**	20
	no	**102**	139
No. of prosecutions pending:		**13**	26

Effectiveness of regulations

10. Overall, do you consider that the operation of the regulations in 1992 proved effective for:

	yes		no		not known
a. fire prevention	**87**	93	**14**	28	**12**
b. prevention of smoke/smut nuisance	**54**	40	**48**	92	**11**
c. preventing threat/damage to property	**90**	92	**11**	34	**12**
d. preventing threat/damage to wildlife	**67**	63	**32**	54	**14**

Comment: A number of authorities were unable to comment as they do not have staff for surveillance. The majority felt that these regulations are effective in preventing damage and nuisance.

Agricultural burning and Clean Air Act 1968

11. Agricultural land is considered as trade and industrial premises for the purposes of s1 of the Clean Air Act 1968. This year, have you prosecuted, or do you intend to prosecute any farmers for causing dark smoke under the Clean Air Act 1968?

	yes		no		not known
a. for straw/stubble burning	**1**	8	**110**	33	**4**
b. for burning other crop residues	**1**	8	**110**	33	**4**
c. for other burning on agricultural land	**6**	20	**103**	48	**4**

ANALYSIS

Overall attitudes of farmers have improved and notifications are down. The bad weather may have played some part in the low level of burning and complaint. There still remain a few areas where burning persists and local authorities are concerned that the remoteness of the burns and lack of staff for surveillance make enforcement of any legislation impossible — mainly in eastern England. Environmental health officers in several areas expressed concern that burning levels are still high and regulations need to be vigorously and publicly enforced.

Numbers of complaints, fire brigade call outs and prosecutions are all down, which is encouraging. MAFF figures on straw burning show a fall of 23 per cent in 1992 compared with 1991, and the area of land burnt has dropped by 60 per cent since 1989. However, in view of the fact that the practice is to be banned next year the level of burning is still significant. NSCA will monitor the effectiveness of the ban in a repeat survey next year.

PROPOSED CONTROLS ON THE BURNING OF CROP RESIDUES

The Society accepts the need for limited exemptions to the general ban on crop residue burning, but is keen to ensure that these are kept to an absolute minimum and are only allowed where no practicable alternative exists. NSCA's *1992 Straw and Stubble Burning Survey* reveals that the 1992 burning season caused widespread nuisance, albeit at a lower level than some previous years. Clearly many farmers will always take the opportunity to burn where this remains a disposal option, and the criteria for exemption must be drawn explicitly to assist both farmers and regulatory authorities in meeting the law.

The Society accepts the view that incorporation of linseed residues presents practical difficulties. However the relatively late burning season coincides with the onset of autumn when meteorological conditions often produce calm weather and temperature inversions, leading to the concentration of pollutants in ground-level smogs which last for several days. Linseed residue burning could exacerbate local episodes of poor air quality, and thus should not be considered a long term disposal option. We accept the proposal to allow a further three years of linseed residue burning with reluctance, and only subject to a vigorous programme of research into alternative disposal options.

The request to dispose of small amounts of straw by burning must be treated with considerable caution. Broken bales are not uncommon, but if broken during baling operations it should be a simple matter to rebale in the field using the baling equipment in use. If broken during loading and transportation, most loading equipment is able to deal with piles of loose straw; any small amounts left over can be dispersed over the soil surface to await incorporation along with the stubble. Research by the Society has consistently revealed the difficulties experienced by local authorities in enforcing crop burning regulations. This proposal would pose particular enforcement difficulties and inevitably involve disputes about what represents a "small" amount of straw. Given that any broken bale small enough to burn without nuisance should also be small enough to spread and incorporate with stubble, we strongly recommend that no exemption is allowed in this respect. This would make for clarity in the regulations, simplicity in enforcement, and avoid any possibility of abuse.

The criteria for the granting of temporary exemptions are not spelled out in the proposal. As noted above, we believe such criteria should be explicit and set to control burning to an absolute minimum. In circumstances where incorporation presents problems — poor weather, waterlogged soil — effective burning may also prove difficult. We therefore recommend that such criteria should be the subject of full consultation.

Where exemptions are allowed there is no reason to suppose, as the consultation paper states, that *"the extent of any burning will be much smaller"* (para 6). As noted above, many farmers will burn whenever they are so permitted. Geographical exemptions could thus result in widespread burning within a particular locality. We recommend that the *Crop Residues (Restrictions on Burning) (No 2) Regulations 1991* should remain fully in force for any exemptions and in particular notification of fire authorities and environmental health departments should continue to be a requirement.

We remain concerned about the exemption for potato haulm, and will seek evidence of any problems caused by burning of exempted crops and material, in future surveys. We would also note that one of the exemptions — the burning of straw used as animal protection/bedding — is actually one of the major sources of nuisance complaints to this Society. However we acknowledge that it was not the aim of these Regulations to address this particular problem, and inclusion would be inappropriate.

OFFER CONSULTATION PAPER: ENERGY EFFICIENCY

Energy efficiency is an important aspect of energy policy, and NSCA responded to the consultation document from the Office of Electricity Regulation (OFFER), as part of a move towards development of a more general energy policy.

The Society welcomes the initiative to open debate on a subject of crucial importance to air quality. The consultative document provides a framework, but we consider that its scope is too narrow to encourage the breadth of debate which the issue merits. In

particular we would wish to see greater emphasis on the environmental impact of energy efficiency and believe that this can be achieved only within an approach which gives more equal weight to consideration of supply and demand side measures.

We welcome the recognition that the market for energy efficiency is distorted and that measures in addition to competition will be required to secure improvement on reasonable timescales. In this connection, it is surprising that OFFER dismisses the matter of environmental costs as a matter for Government and international bodies. The Office is uniquely well placed to consider the consequences of environmental protection strategies for utilities and their customers, and should take a lead in protection and optimisation of the place of electricity in the energy economy.

We share the Association for Conservation of Energy's view that OFFER should first establish the objectives of the energy efficiency programmes which it seeks to promote. We agree that the primary objective should be to reduce the overall costs of providing electricity services to customers, provided that there is realistic reflection of environmental costs in prices.

OFFER recognises clearly that effective discharge of its responsibilities in relation to competition requires collection and interpretation of a large amount of information on utilities' costs. The development of sound policies for promotion of cost effective measures for energy efficiency requires comparably detailed information on financial and technical aspects of both the supply and demand sides. The Office should require utilities to gather this information to inform a vital public debate. Only in the light of this debate will it be possible for the Director General to create a rational market based framework which will provide incentives for investment in energy efficiency.

We believe that it is unfortunate that the Director General considers that it is too early to consider the full effects that the competitive regime in electricity supply would have on the efficient use of electricity. Investment decisions are being taken now on the basis of comparably incomplete information, and OFFER should be in a position to evaluate these decisions as best it can so that preliminary regulatory action can be taken now even if it has to be refined later when the position is clearer. Recent experience in other UK markets has demonstrated their limitations as allocators of capital for development of infrastructure. Regulatory authorities elsewhere, notably in the US, have recognised this weakness of the market and OFFER should sponsor a thorough evaluation of the lessons to be learnt. Failure to do so may contribute to mis-allocation of resources on a scale which could weaken the national economy.

We recognise that the Codes of Practice on the Efficient Use of Electricity which OFFER has required public electricity supply companies to produce are an important interim measure for promotion of energy efficiency. The national interest would be best served, however, if they were required to consider the appropriateness of electricity for particular purposes. If this were the case, for example, advice on the appropriateness of bar and fan heaters for home heating would have to be broader than an invitation to consider home heating.

Evaluation of the extent to which electricity utilisation was moving in the directions advised by the Codes of Practice would be an important aspect of the data-gathering exercise referred to above.

Given the early recognition that market measures alone are probably insufficient to raise energy efficiency levels in the electrical sector to the optimum level so far as the national economy and environmental protection are concerned, a surprisingly narrow range of options are presented for discussion. Whilst the Office is correct in pointing out that circumstances in the UK would not be best served by implementing least cost planning along the lines of the US. A much fuller discussion of possibilities for intervention and the parties that should be involved is necessary, and we look to OFFER to promote it during the consultative period and after preliminary conclusions have been published.

THE EC SMALL COMBUSTION PLANTS DIRECTIVE

Introduction

The Society has been consulted on the planned EC Small Combustion Plants Directive (SPCD) at a stage when proposals are still being evalutated. Our concern is that the proposed Directive should strike a sensible balance between social, economic and environmental objectives.

The Rationale for the Directive

Four reasons are given for the proposed Directive. Firstly, that emissions from small plant will increase as a proportion of the total, as emissions from large plant are reduced by the Large Combustion Plant Directive (LCPD). This may be true, but is not in itself a reason for introducing controls The LCPD was agreed on the basis that environmental improvement would be achieved most cost-effectively by targeting large sources first. It is the total emission which is important; the relative contribution from different sources is only an issue when devising a balanced strategy for meeting agreed emission targets.

The second reason — a likely requirement for further emission reductions in the light of work on critical loads — points to the need for targets. The end must justify the means. Without a target for emission reductions, the proposal is made in a policy vacuum. It is impossible to evaluate the proposal and any possible alternatives without first agreeing targets based on local air quality guidelines for health and critical loads for ecosystem effects and structural effects. Only then can we consider the contribution which the proposed controls could make to reducing total emissions, and whether these could be achieved more cost-effectively by other means.

The third reason — that some member states already have controls — introduces the element of competitive advantage and harmonisation of standards. In some markets this can be justified, particularly those with large volumes, substantial inter-state trading and a relatively homogeneous product — for instance in vehicle emission standards. This is less relevant for small combustion plant. The KPMG report emphasises that the distribution of size classes, relative market penetration of fuels, relative contribution to overall emissions, and availability of data, vary very widely between states. If the true rationale for the Directive is harmonisation, likely to benefit those member

states who already have tight standards and a supporting manufacturing base in place, this should be stated. However this Society urges that any tightening of regulations should be justified on the grounds of environmental protection and not competition.

The fourth reason — that high sulphur fuels could be switched to the SCP market — is a valid concern. Increasing demand for low-sulphur fuels in the LCP sector could result in a price advantage for higher-sulphur coal in the SCP sector, where the sulphur content of heavy fuel oil is also likely to drift upwards. However the use of higher sulphur fuels must again be governed by effects-based considerations. The costs and benefits of setting fuel quality standards, plant emission standards, or a mixture of the two, will almost certainly vary widely between member states, and there is unlikely to be an optimum prescription.

An Alternative Approach

The LCPD sets overall emission targets for member states and allows them to devise their own strategies for meeting the requirements of the Directive. If it is accepted that the case for product harmonisation is weak, there is a strong case for the SCPD to be adopted under Article 130s rather than 100a, as part of a broader strategy to meet environmental objectives which will arise, *inter alia,* from UNECE agreements on critical load targets leading to new NOx and SO_2 protocols, and WHO air quality standards. It would oblige member states to control emissions from SCP in order to meet agreed environmental objectives; setting out, but not prescribing, the control options.

Such a flexible approach would allow member states to devise the most cost effective strategies according to national circumstances. For the UK this would allow, where appropriate: special considerations for indigenous fuel supply; the use of economic instruments instead of regulation; the extension of local authority control to smaller combustion plant; setting fuel quality standards in the context of the UK energy market; taking account of concerns about desulphurisation residue disposal.

The application of the subsidiarity principle suggests that individual countries should, by and large, be empowered to meet agreed EC environmental targets in their own way. Any Directive relating to the SCP sector should therefore combine a flexible approach to regulation with a robust mechanism for monitoring and enforcing compliance.

Technical Issues

Within such a framework, a number of technical issues would need to be addressed in relation to abatement technology, fuel standards and the structure of the UK SCP sector.

1. Large scale FGD systems are capable of 90% removal efficiency and can produce saleable gypsum as a by-product. Sulphur abatement technology for small plant operates at a much lower efficiency, using excess of lime or limestone and produces a waste material which may be difficult to handle and dispose of. There will be environmental costs in the processing and transport of lime, and in the disposal of waste, without the economies of scale associated with large plant. This issue should be addressed by DGXI.

2. Many boiler plant below 50MW operate at low load factors, often in standby positions. Tight emission standards for plant which is rarely used are thus unlikely to achieve cost-effective environmental improvement, and would accelerate conversion to gas firing. A case could be made for setting different emission standards according to the operating hours, as certified by the operator. This would allow the use of less expensive cyclone technology for low load factor plant.

3. The UK is the only state with a significant proportion of solid fuel plant in this sector. The comparatively stringent emission limits for coal in comparison with oil would thus impact inequitably; the case could be made for coal firing to be accorded the same emission limits as oil on a thermal equivalence basis.

4. The control of particulates is of relevance to local air quality, particularly in relation to heavy metal emissions. Tighter emission standards could be justified in areas where environmental monitoring revealed an exceedence of air quality standards.

Summary

Given the diversity of plant involved, the potential heavy burden of cost on industry at a difficult time in the economic cycle, and the uncertain benefits to local and regional air quality, we consider that a more accurate estimate of costs and benefits throughout the Community should be obtained before more refined and specific proposals are implemented.

NSCA RESPONSE TO THE SECOND CONSULTATION PAPER: PUBLIC REGISTERS OF LAND WHICH MAY BE CONTAMINATED

Introduction

The second draft of these proposals is substantially different from the first (published July 1991), meeting some of the genuine concerns which were expressed about the original proposals. Many of the fundamental principles remain the same, and this is to be welcomed. However, questions of detail, timing and scale remain.

Specific Comments

The list of contaminated uses has been reduced substantially. Although this makes the proposals more manageable, there is concern that the list now excludes some potentially serious contamination sources. A number of other uses should thus be included including metal, printing and textile processes, thermal power stations, and chemical and petroleum bulk storage. The delineation of land subjected to contaminated use needs further classification; no attempt is made to consider the physical scale or duration of use, nor the implications for large sites with local contaminative uses, or multi-use sites. Would a school chemistry laboratory, or a small test facility in a large complex, render an entire site liable for entry?

Furthermore the register will not (as originally proposed) warn of the *possibility* of contamination but tries to show that contamination is highly *probable.* This reduced

form is much less useful for planning authorities. It would neither act as a reasonably comprehensive checklist of sites where further investigation would be appropriate (type b, Table 1), nor could it be a good basis for a definitive list of sites which are actually polluted, where some types of development would not be possible without action being taken (type d, Table 1). Although the revised list of contaminative uses might have a "very high probability" of contamination, there will be other uses which turn out to have lead to contamination. Indeed, contamination will also have occurred as a result of unrecorded contaminative uses or as unrecorded activities of uses not even considered to be possibly contaminative on some longer list of uses. The term "very high probability" is also unquantified and the implicit statement that these uses have a higher probability of contamination than others is unsubstantiated.

Table 1: Types of Register

a) 'all possibles'	Comprehensive list of all sites which might be contaminated (not achieveable in real life)
b) 'nearly all possibles'	Reasonably comprehensive list of sites which might be contaminated, a warning to consider thoroughly when planning applications come forward
c) 'some probables'	Some of the sites which probably are contaminated and so *might* be polluted
d) 'certainties'	Sites which are *known* to be polluted so that some types of development are not possible without action being taken first

The stated intention to extend the list in due course will only add to the possibility of blight by placing some land in a "possibly to be added to a list of possibly contaminated land" limbo. Work would also be duplicated in re-checking historical sources for classification subsequently added to the list. Efforts should be made to produce a definitive list at this stage.

Allowing one month between notification of owners and entering of sites on the register would coincide with the proposed period to be allowed for publishing particulars in the local newspapers. Whilst agreeing that provision should be made for challenging entries, judicial review is considered too weighty an instrument. The local authority ombudsman would be unlikely to find maladministration in cases where a genuine mistake had been made by a local authority, so this too is an inappropriate means of redress. The Society recommends that a statutory appeal procedure should be provided with recourse to a Magistrates Court.

The current proposal is for the register to be in two parts: land treated or investigated (Part B), and other land (Part A). As originally proposed, the register will contain references to investigations of contamination, and will not contain an assessment of the condition of the site. This is an unnecessary and undefined distinction. The quality and worth to planning authorities and others of an "investigation" or partial treatment will vary so greatly that it would not be helpful to make a simple distinction between those sites where some sort of investigation or treatment has taken place and those where it has not. Such a two part system would also require those maintaining the register to

switch sites from Part A to Part B as investigations were reported — an unnecessary administrative procedure. The recommended format for the layout of the register could usefully specify the inclusion of a section for notes of investigations and treatment. This would need to be in sufficient detail to enable users to make a preliminary assessment of their quality and determine whether they were worth following up.

The proposed longer lead-in time would be helpful and could perhaps be extended to eighteen months. Guidance on the registers, use of information technology and the format of the registers will of course be required prior to the regulations coming into force.

It is felt that there is inadequate recognition of the resource implications for local authorities of the compilation of the registers. Certainly the estimates in the original Consultation Paper of between £35,000 and £40,000 per average authority would appear to be a significant underestimate. Furthermore, it would be helpful if the resource allocation could be related to need (perhaps using a formula utilising the population of the authority and history of industrial development), and specifically identified so that it reaches its target. Otherwise some authorities will struggle to find the resources to undertake this function adequately.

It is suggested that authorities should be required to maintain their register open to public inspection at all reasonable times.

TEMPORARY USES OF LAND: AMENDMENTS TO THE TOWN & COUNTRY PLANNING GENERAL DEVELOPMENT ORDER 1988

In a letter to the Development Control Policy Division of the DoE, NSCA put forward the following comments on the above consultation document.

The Society is concerned about the increased prevalence of noisy activities which escape planning control through the temporary use provisions. Whilst the figure of 28 days may appear to be a reasonable level below which it should be unnecessary to invoke planning powers, in practice this can mean, for instance, events such as clay pigeon shoots taking place every Sunday during a six-month summer period. The effect on local residents can be imagined. The problem is exacerbated where no effective Code of Practice has been agreed to control the noisy activity.

The Society considers the current 28 day limit to be too permissive for any activity likely to cause noise disturbance. We were particularly disappointed to see the Department capitulate to pressure from the clay pigeon shooting lobby when proposals to reduce the 28 day limit to 14 were published in 1989. Since that time clay pigeon interests have been unable to agree a workable Code of Practice and we firmly recommend that in the absence of any other effective controls, the limit should be reduced to 14 days as originally proposed.

In its comments on the 1991 Department of Transport proposals to control aircraft noise, the Society noted that current controls are inadequate, particularly in relation to

smaller airfields and the use of helicopters. We cited the 28 day temporary use provision as an inexcusable loophole for noisy activities, recommending that the temporary use allowance for specified noisy activities, including helicopter landings, should be reduced to 14 days or less across the board.

Furthermore, withdrawal of GDO rights using an Article 4 Direction or a discontinuance order should not be subject to compensation. Noisy activities are straightforwardly antisocial, and under no circumstances should individuals be compensated for any requirement to cease.

In summary, therefore, we recommend that the GDO temporary use allowance for specified noisy activities, including helicopter landings and noisy sports, should be reduced to 14 days.

CONSULTATION PAPER: PLANNING POLICY GUIDANCE 6 (REVISED): TOWN CENTRES AND RETAIL DEVELOPMENT

A new draft Planning Policy Guidance Note (PPG6) introduces new environmental issues into official guidance on retail developments by emphasising the need to promote development patterns which minimise journeys and encourage public transport (as a means of limiting CO_2 emissions), and assist recycling. NSCA has commented as follows:

There is widespread agreement on the need to integrate environmental, social and economic policy; the planning system is well placed to reconcile a wide range of policy aims, including minimum standards for environmental quality, and to establish criteria for those types of development which may have the potential to cause pollution — directly or indirectly.

Retail developments have the potential to cause pollution directly through their operation, and indirectly through their influence on traffic patterns. The Society therefore welcomes this draft guidance note; overall its tone is positive, and it is clear that a real attempt has been made to integrate environmental concerns with the social and economic dimensions of planning decisions. However the main emphasis is on the reduction of carbon dioxide emissions from traffic, with a subsidiary reference to recycling facilities.

The Society would have preferred to see a more exhaustive assessment of the environmental impact of retail development, which would include inter alia: local air quality and noise impacts of traffic; the efficiency of heating, lighting, ventilation and refrigeration systems; use of ozone-depleting substances; thermal efficiency of buildings; potential for waste minimisation. Other environmental impacts such as visual intrusion and land use matters, although outside the remit of this Society, are also important.

Whilst planning departments are rarely in a position to demand environmental performance over and above that required by minimum standards such as the Building

Regulations, there is considerable scope for entering into legal agreements with developers which could have environmental benefits. There is also ample precedent for commuting payments, for instance in respect of car parking spaces, to facilitate socially beneficial initiatives. Viable public transport provision to new out-of-town developments will be a priority in this area.

The following comments relate to specific environmental impacts:

1. Carbon Dioxide

Paras 5 and 30 identify shopping trips by vehicle as a source of CO_2 emissions. The draft advises that ". . .new development should be sited so as to reduce the number and length of car journeys." It is suggested that major retail development should therefore take place in existing town centres, accessible by foot, cycle and public transport. The stabilisation of CO_2 emissions will be difficult to achieve, and a reduction in vehicle travel will be impossible, without a fundamental change in public behaviour.

If local planning authorities are to play a part in this via the control of shopping development, the following will be required:

a) local monitoring to find out where, how and why people travel;
b) model studies of how new development affects travel patterns, which could be used in a variety of local circumstances;
c) methods devised for the assessment of planning applications in terms of transport CO_2 emissions;
d) Government guidance and local statutory policy to guide to the location of, and ultimately enable a refusal of permission for, new development because of unacceptable CO_2 emissions.

The efficiency of heating, lighting, ventilation and refrigeration systems, and the thermal efficiency of building structures will relate directly to CO_2 emissions. So too will operational practices; many retail outlets are open-fronted, increasing the requirement for winter heating and summer air conditioning. Heat from low-efficiency lighting can also increase the necessity for summer air conditioning. Planning authorities could encourage developers to review the overall energy efficiency of their proposals with a view to entering into agreements to minimise total energy impact. This might be particularly appropriate if, for instance, energy savings could be shown to offset likely increases in CO_2 emissions generated from additional traffic.

2. Local Air Quality

The draft Guidance does not mention local air quality. DoE Circular 22 of 1984 *"Memorandum on Structure and Local Plans"* contained a reference to air quality standards[1]. Unfortunately, this reference was not carried forward when 22/84 was cancelled by the first edition of PPG12 *"Local Plans"* (now superseded by the second edition of PPG12 *"Development Plans and Regional Planning Guidance"*). European

1 "In formulating all their policies and proposals, local planning authorities should have regard to. . .In particular the introduction of European air quality standards may impose a constraint on the extent to which plans should provide for intensification of development in some urban areas." (22/84, para. 4.34)

Standards were mentioned but not set out in the draft PPG *"Planning and Pollution Controls"* (June 1992; para. 1.15). The draft Guidance must recognise that many town centres also suffer from local air pollution problems, where levels of carbon monoxide and oxides of nitrogen exceed health guidelines.

NSCA believes that in order to achieve acceptable local air quality, local air quality management plans — involving a partnership between pollution control authorities, planners, industry and the public — must be developed. The role of planners will be to influence the distribution of polluting sources which collectively may threaten air quality. Guidance should address the siting of retail development and role of traffic management in controlling the emission of pollutants from vehicles. Emissions of volatile organic compounds from petrol retailing associated with superstores and retail parks may also be of local significance. This new draft is an opportunity to:

a) expand on the importance of air quality in town centres — where people are in close proximity to the exhaust of vehicles;
b) remind planners and others that air quality standards exist;
c) set out standards and how they should be measured (in an annex) — for the overall assessment of local air quality.

3. Noise

As with local air quality, the noise implications of new developments should be recognised as an important environmental consideration. Where modelling suggests that, as a result of increased traffic generated on existing roads, noise levels may exceed the 68 dB(A) level (or any other justifiable threshold) planning authorities may wish to secure an agreement from developers to insulate affected houses. Agreements may also be made about delivery vehicle movements during unsocial hours, and on-street parking — particuarly of refrigerated vehicles — which can cause considerable local noise nuisance.

The Guidance could also recommend that re-routing of traffic should not result in a significant degradation of the noise climate around existing noise-sensitive property. In addition some traffic calming measures, such as speed bumps etc, can themselves cause specific noise problems.

Caution should be exercised in the recommendation that planning authorities should encourage the conversion of vacant office and retail premises to other retail or residential uses. Such changes of use may occur in areas which are unacceptably noisy for noise-sensitive development; alternatively they could increase noise in areas which have hitherto enjoyed acceptable noise levels. Reference should be made to planning policy guidance on Planning and Noise.

4. Waste and Recycling

The draft Guidance suggests that "The design of new superstores should incorporate recycling facilities for glass, cans and newspapers, to encourage energy conservation. . ." Best practice in waste management changes year by year, so given that planning guidance is only revised every five years or so, there is a need to make this section more robust.

Guidance should not refer to particular types of material; markets for recycled material and the lifecycle analysis determination of the appropriate balance between waste streams will change over time. Neither should guidance refer specifically to "recycling" — other forms of waste management such as collection for re-use or composting are often more environmentally beneficial. Guidance should advise that all developments in town centres and all out-of-town shops should provide appropriate facilities to encourage the collection of waste for re-use, recycling, energy recovery or composting. The emphasis should be upon integration with the local waste management plan which will vary according to locality.

Planning authorities may also wish to secure agreements from developers on procedures designed to minimise the creation of waste; measures which are liable to reduce the risk of land contamination; and the use of ozone-depleting substances in refrigeration and air conditioning systems.

PROPOSED LOCAL ENVIRONMENT CHARTER

In a letter to the Department of the Environment NSCA set out its views on the Local Environment Charter. The Society welcomes any initiative which aims to alert the public to environmental issues, rights and responsibilities and made the following observations:

A clear distinction must be made between those environmental functions which local authorities have a statutory duty to undertake, and those for which they have discretionary powers. Our concern is that, taken alongside the Audit Commission's proposals for performance indicators, local authorities may reallocate resources in favour of performance-related statutory duties (for instance in relation to noise complaints or litter) at the expense of other equally important, but discretionary powers (for instance air pollution monitoring or environmental information provision). Many examples of good practice will relate to local authority activities which fall into the latter category. We note the intention to "identify means of improvement within current resources". The resource implications of the charter must be fully addressed in order to avoid any possible threat to environmentally beneficial activities.

Concern about air pollution is widespread and we believe that the public has a right to information about air quality in its locality. Good practice will therefore include examples of local authorities which monitor a range of air pollutants, interpret the data to the public, give timely and relevant advice, and adopt a co-ordinating role in managing local air quality.

Many progressive authorities take an active role in environmental education and most provide information about environmental issues; every year NSCA supplies local authorities with hundreds of thousands of public information leaflets on topics ranging from neighbour noise to the greenhouse effect. The public should expect its local authority to be a first port of call for objective environmental information.

The approach to neighbour noise problems varies widely across the country. NSCA has published local authority guidelines for responding to neighbour noise

complaints which are intended as a minimum standard. Examples of good practice include an out of hours emergency service with guaranteed response to deal with serious complaints; the use of mediation schemes; satisfactory complaint response times; help in situations where the authority is unable to witness nuisance directly and thus serve a Section 80 notice under the *Environmental Protection Act 1990.*

Response to noise complaints is one aspect of the wider question of availability. The charter should emphasise which information and services the public should expect to be available, and when. Expectations of a minimum availability of services could be categorised: around the clock (eg serious noise complaints), every day (eg civic amenity sites), during office hours, etc.

The existing proposals for the local environment charter are very sketchy; these comments represent a preliminary view on those outline proposals. We very much hope that this initial consultation will result in more substantive proposals and that a second round of consultation will allow a more thorough evaluation of the planned charter. Otherwise local authorities may not be able to deploy their resources in the best interests of environmental protection.

REPORTS

THE USE OF DIGITAL AUDIO TAPE RECORDERS IN NOISE COMPLAINT INVESTIGATIONS AT CRAWLEY

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Introduction

In September this year the authors wrote a letter to *Environmental Health News* giving brief details of the way Crawley Borough Council use a digital tape recorder in their investigations of noise complaints and indicated how this need not be an expensive option. This resulted in over thirty local authorities calling the authors for information. Their queries related to the equipment available, how it is used in investigations, the legal aspects and the technicalities. At the request of the NSCA we have produced this article in which we have covered these topics.

Background to Crawley

The Borough of Crawley lies at the north-eastern extremity of West Sussex. The town was one of the original post-war New Towns, and is, therefore, a planned borough, with Gatwick Airport in the northern-most part, a "green" band of restricted development beneath, an industrial zone below this, and, finally, 13 neighbourhoods of relatively modern housing. Crawley has a population of approximately 88,000 with a higher than average proportion of young people and shift workers. Until recently Crawley enjoyed one of the lowest levels of unemployment in England and Wales.

The Environmental Health Division of The Environmental Services Department has a staff of 38, of which 21 are EHO's or Technical support staff (the majority of the rest are staff working at the Port Health Unit at Gatwick). The responsibility for noise control falls to the noise section of the pollution team, which consists of a Senior EHO and a Senior Technician.

The noise team currently deals with over 600 complaints a year, which is over two times the national average and these are increasing at the rate of about 25% per annum. Approximately 75% of these are domestic complaints, of which one third relate to noisy dogs (1991-1992 figures). The Environmental Services Department has a policy of investigating all complaints received concerning noise nuisance, whether from a single person or not.

Crawley has, for a number of years, like many local authorities, employed tape recorders as a tool to assist in the investigation of noise complaints. The usefulness of recording equipment in this capacity has been restricted by the facilities, quality and price of the hardware available. In recent years, analogue recording systems have been

facing competition from digital technology, which offers far better quality, for a given cost, in terms of dynamic range, frequency characteristics and facilities (such as date and time marking, and improved record searching). For nearly two years, the department has been taking advantage of this new technology as part of the development of a system to help in the assessment of complaints.

The Evolution of Noise Complaint Investigation at Crawley

It would be misleading to consider the use of the noise recording equipment in the investigation of noise complaints without looking generally at the investigation of these complaints and thus the context in which the Digital Audio Tape Recorder (DAT) is employed.

The Previous Approach and its Pitfalls

Whilst there was not a blanket approach to the way noise complaints were investigated, generally, up until 1989, the investigation initially took the form of a standard letter to both the complainant and the person being complained of.

If complaints continued, then record sheets were provided to the complainant, and, quite possibly, a further approach would be made to the person allegedly causing the nuisance. From this point onwards, visits as necessary (and occasionally monitoring using an analogue tape recorder) would be made and the assessment of nuisance would be based upon diary sheets and other evidence. If it did not appear that action would be possible, then the complainant would be informed that no further action could be taken. If the noise did prove to be severe enough to warrant action then an abatement notice would be served.

Problems With This Approach

As the number of complainants increased it was realised that this may not be the best, nor the most efficient, method of investigation. In particular, several key areas of the approach were recognised as being wasteful of resources and detrimental to both the investigation process and to the rights of the person about whom a complaint had been made.

The dispatch of the standard letters before the matter was investigated would, on the face of it, appear to be a good thing. Indeed, in some cases the noise was reduced to the satisfaction of the complainants, however, it did give rise to a number of problems.

Firstly, at this stage satisfactory evidence of the nature, extent and even the existence of a noise problem had not been established. As a result many people were sent letters which were not justified and, even with the most mild of wording, caused offence, annoyance and upset.

Secondly, anyone receiving a letter, and who was creating noise, would be aware that the matter was now under investigation. However, alerting the people to the fact that there had been a complaint made about them was often a contributory factor in the length of time some cases took to resolve. In such cases, the noise would reduce for a period after the letter was received and then slowly build up again until a further com-

plaint was made. Further investigation would then be necessary. Evidence also suggested that, in the last situation, the noise was sometimes raised to a level which was a nuisance, where, prior to the letter, the noise would not have been worthy of further involvement.

Visits and letters to complainants before the nuisance had been substantiated also created a problem as an officer could only say, at that stage, that a complaint had been received, but could not state a professional opinion as to the existence of a statutory nuisance. Thus, the people who were being approached were not, in the majority of situations, persuaded to modify their behaviour. The poor design of the record sheets created problems in terms of how people believed they should be completed and inadequate records often resulted, leading to a delay in the investigation process.

The Current Approach

Over a period of about a year a more clearly defined investigation method was evolved to "streamline" the process but it remains at the discretion of the investigating officer as to whether this approach should be followed in each case. The method is as follows.

1. On receipt of a noise complaint the complainant is sent a standard letter, an explanatory leaflet (which is specific to this department's approach) and a number of noise record sheets. The letter and the leaflet outline how the department normally investigates noise complaints, what type of noise action can be taken on, what is required from the complainants to allow action to be taken and how the record sheets should be completed.

The noise record sheets now provided are clearer in their layout and restrict the information offered by the complainant to that which is applicable to noise nuisance investigation. They provide, for each relevant occurrence , a section for the date; start and finish times; source of noise and, importantly, how the noise affects the life of the complainant. We state that they may be filled in by anyone in the household but insist that each entry is initialled and every person contributing to the record signs it in full at the bottom. At this point they are also signing a declaration of honesty and confirming that they will be willing to stand by their information in court should this become necessary. We feel this is important in order to impress upon them the seriousness of the action they are involved in.

2. If, having made and reviewed their records over about two weeks, they believe that the matter of which they are complaining is one on which action can be taken, then they return them to the officer who is dealing with their complaint.

Whilst we cannot provide actual figures, it is believed that at least one quarter of complainants do not return to the department with completed record sheets. It is important to consider this since it is of concern if these people have simply been put off by the procedures. There will be a number who, having kept the diary sheets, realise the problem was not as bad as they thought; or sometimes, although nothing has in fact changed, they think the situation must have got better. Some will still be bothered just as much but realise, now that the evidence is clear before them, that no legal action will be possible. A small number will have been malicious complaints. Others will simply not

want to bother themselves and there will be a (hopefully) small number who do not want legal action to be taken for a variety of reasons.

These last two groups will often request that informal pressure is brought to bear on those about whom they are complaining. It should be borne in mind that nuisance is a low standard in law requiring a fairly grave situation before action can be taken. Good evidence is required and court action is unlikely to be possible without a personal appearance by the person aggrieved. Further, in so far as an informal approach to the person being complained of, unless this is done making it clear that there is no evidence to support the complaint, it is tantamount to applying pressure without allowing the respondent his legal rights.

Once the record sheets are returned, the investigating officer analyses what they show by plotting the date, time and duration of the noises on a time plot. The plots allow the officer to see whether factors such as frequency, duration and unreasonableness exist in the case, and how best the matter is to be pursued. Analysis of the record sheets often reveals that the noise is not one on which action is either justified or possible, and the complainant is then advised of this. If, however, the records indicate that further investigation is warranted, then it must be considered how best to "witness" the noise to allow its severity to be judged. At this stage the decision is made as to whether the use of the DAT would be appropriate (see later). Once a decision has been reached on how best to proceed the complainant is contacted and informed.

3. There are no hard and fast rules as to how many times an officer needs to visit to witness a noise, or how many times the DAT has to be left. The decision as to what can be considered reasonable is decided on the merits of each case.

4. Following attempts to witness the noise (personally or with the DAT) a decision must be made as to whether all the evidence considered indicates that a nuisance exists.

If it appears that it does not, then the complainant is advised as such. However, the investigating officer may believe that, whilst the noise does not amount to a statutory nuisance, it is unreasonable and may decide to contact the people responsible to discuss the matter with them.

If the evidence indicates that a statutory nuisance does exist, then the officer is under an obligation to serve an abatement notice. However, remembering that so far, following this procedure, the person responsible will not yet have been contacted by the authority, it is usual, though not universal, to make an informal approach in order to resolve the matter without recourse to law. Although the *Environmental Protection Act* requires the service of a notice, there is no time stipulated and it can therefore wait to be used if the informal approach is unsuccessful. This is also of benefit, should the matter come before a court, in showing a reasonable approach has been taken.

Finally, since the matter has now been fully investigated, any claims from the recipients of the letter that they are not behaving unreasonably can be rebutted.

5. If complaints continue after the time for compliance with the notice has passed, then further evidence of a breach of the notice must be gathered. This takes the form of more completed record sheets being kept, and further efforts being made to "witness" the noise (once again the DAT may be used). Whilst we have prosecuted on the evid-

ence of the complainants alone, it is clear that the best evidence is from an impartial, experienced officer.

This, then, is broadly the course of action followed in the investigation of noise complaints, but it is a process which is continually evolving.

It cannot be stressed too strongly that, in our opinion, there cannot be a procedure "set in stone" for dealing with noise complaints as, whilst there are often common elements, each is as different as the variables, human and otherwise, which contribute to the problem in the first place. Readers will, by now, also appreciate that the DAT is not a panacea in noise complaints, but is just another tool available to assist in the investigation process.

How the DAT is Used in the Investigation of Noise Complaints

The way noise complaints are investigated has already been outlined, but how the DAT fits into this has only been briefly touched upon.

Analysis of the returned diary sheets and other information provided by the complainants forms the basis upon which the next action is decided. It may be that the evidence shows clearly that there is no nuisance. Alternatively, it may show that, assuming it is accurate and honest, a nuisance does exist, or it may be that it indicates that a nuisance may exist, but more information relating to the character of the noise needs to be obtained.

In the last two of these situations, essentially, we are talking about witnessing the noise. There are two methods of achieving this;

a) personal visit to the complainant's property at a time when the noise is likely to be audible, or,

b) setting up the DAT in the complainant's property and using it to record the noise of which they are complaining.

Legally, the best of these two options is the former; but with 600 complaints per annum, and only two officers dealing with them it is not physically practicable, nor financially desirable, to make personal visits in respect of all the complaints which appear to warrant further investigation — particularly as the majority of noise occurrences are outside office hours.

In making a decision as to which method of witnessing the noise is to be chosen regard should be had to the following matters.

A personal visit is preferable under the following circumstances:

a) The regularity of occurrence of the noise makes it likely that the officer will be able to hear it after only a few visits.

b) The DAT has already been used, but the recording provided insufficient evidence on which to base a decision and the officer believes that further investigations are warranted.

c) The nature of the noise, or complaint, does not afford the opportunity for assessment by remote monitoring. In particular, complaints of low frequency

noise, vibration, very short term irregular noise or any which would be difficult to pick out from a recording are ones in which the DAT is unlikely to be useful.

d) The complainant may be unable to operate the DAT.

Use of the DAT would usually be made under the following circumstances.

a) The noise is irregular in occurrence, meaning that it will be difficult to witness by pre-arranged visits.

b) The noise occurs out of office hours and is not regular enough to make arranged visits successful.

c) The officers workload means that visits are hard to fit in.

d) If, for any other reason, the officer believes that the use of the DAT is the most appropriate way of witnessing the noise.

If the DAT does appear to offer the best solution, then it is set up in the complainant's property in the room most affected by the noise.

A calibration tone is recorded on the DAT and the case containing the DAT and the sound level meter (SLM) is locked with the DAT's remote control handset outside the case (See Figure 1).

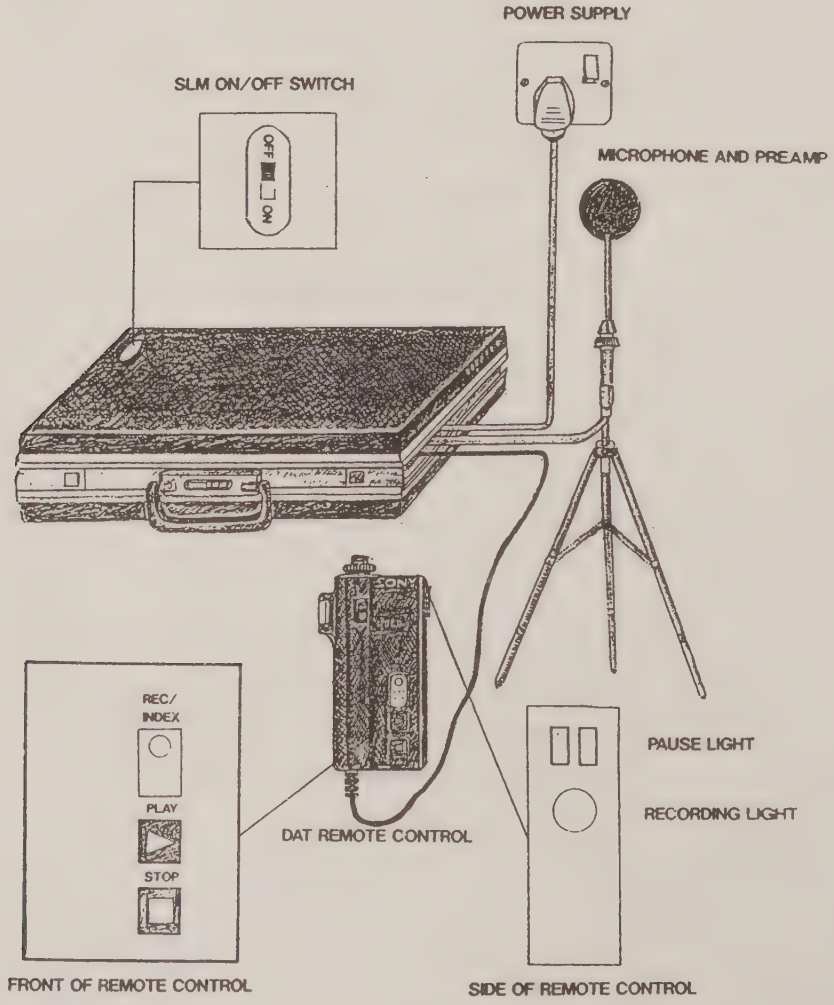

Figure 1: Equipment used for Recording Noise

The complainants are given instructions on how to use the equipment, and are provided with a fully labelled diagram and instruction sheet. They are asked to continue to complete noise records sheets over the period that they are using the DAT and to note when they make recordings.

Although the DAT is commonly supplied with a two hour tape, the complainants are asked to only record a representative sample (usually five to ten minutes is sufficient) of each occurrence of the noise which is disturbing them, but they are asked to use the unit to record as many different incidents as they like. The DAT is usually left with them for about seven days, and then collected. Upon collection, a further calibration tone is recorded.

The process of analysis involves, firstly, comparing the calibration tones at the start and end of the tape to ensure they do not vary by a significant degree and then listening to the recordings which have been made. It is possible to get levels of noise from the DAT, but its primary uses are to corroborate the written records, including the type of sound, dates and times, and, generally to help answer the question "is this noise reasonable?"

Technical details of play back analysis are covered later, but a feel of what the noise would be like in the room can often be got from peripheral noises, such as cars passing, birds singing etc., which have been recorded incidentally, or by noises the complainants make, such as breathing, moving etc. Noises made by the complainants in this manner can also assist in other ways, such as the gentleman who recorded himself telling his wife he was "just going to stir those dogs up" — obviously for the benefit of the recording!

Whilst such noise can assist in the analysis process, they can also be a hindrance. Often, despite repeated requests at the time the equipment is set up, for complainants to leave the room and keep as quiet as possible during recording, they remain unaware just how sensitive the equipment is, and the noise of which they are complaining is masked by the noise they create.

Rationale Behind The Way We Use Tape Recordings

Tape recordings have been used in noise assessment for many years as a means of "bringing the sound back to the lab" for more complex analysis than can be achieved in the field and for unattended recording of sound. It is the latter which is the subject of this article and a number of methods for this have been used by various authorities. Firstly, timers have been used to turn on the recorder when the sound is expected to be heard. Secondly, the timer could turn the recorder on for a short time repetitively at a predetermined rate thus "sampling" the nuisance occurrences. The number of times the noise of interest is recorded, its levels and times of day are all relevant to the assessment of nuisance. Thirdly, the recorder can be tripped by a predefined sound pressure level. Finally, the complainants could be asked to operate the equipment when the noise occurs.

Each has its advantages and disadvantages and therefore its place but it is the third that we currently employ at Crawley. The rationale behind this is that we feel it is important in nuisance assessment to establish what the complainant is concerned about. With the first two techniques the officer (and fate) determines what is recorded

and the officer places his values on it — it may be that matters thought to be bad by the officer do not worry the complainant. By allowing the complainant to control the recording we allow them to demonstrate the cause of their concern.

This technique has of course been used with older types of recorders but lack of remote control made the operation more complex for the complainant and did not enable the recorder to be locked away to prevent tampering. Whilst it is not thought that there ever was any foul play by the complainants in terms of tampering with the equipment, the fact that it is now impossible makes the evidence more robust. The final advantage with the modern DAT recorders is their large dynamic range which makes the successful capture of the sound far more likely (more of dynamic range later).

The Equipment We Use

Our "set-up" consists of a TCD-D10 Sony DAT recorder and Bruel and Kjaer 2231 SLM housed in a single case. (See Figure 2.) The DAT recorder we have chosen records, along with the noise, the date and time at which the recording was made. The case is locked when left at the complainant's house which prevents tampering with the DAT clock or the recording levels. The mains cable, microphone extension lead and DAT remote hand set are fed through the case. The handset is relatively simple only allowing recording to be started or stopped (it does not enable rewind, fast forward etc.). This is exactly the operation we wish the complainants to carry out — nothing more. The unit is restricted to use in the location at which it is installed, limited by the reach of the mains cable plus the microphone lead. We have added clips to these leads, inside the case, to limit their extension. If an attempt is made to move the unit to another location then unplugging the mains lead turns off the DAT which cannot then be turned on without opening the case.

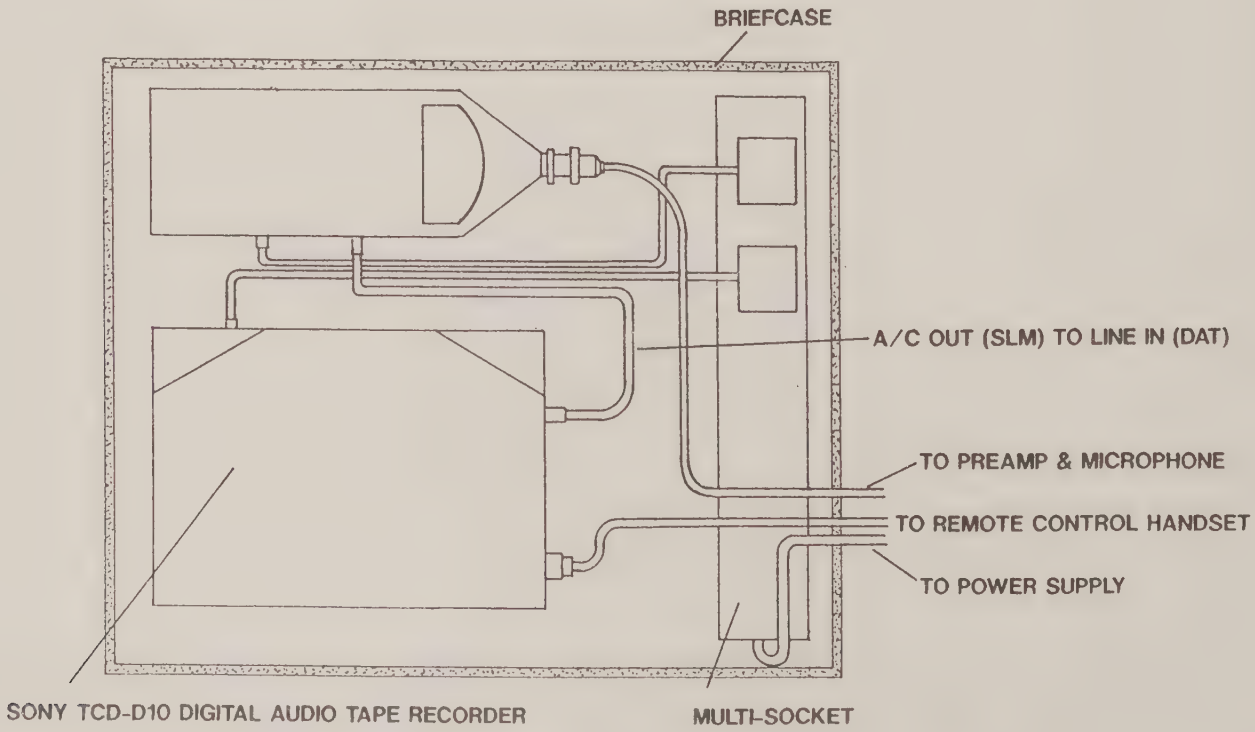

Figure 2: Bruel & Kjaer 2231 Sound Level Meter

Technical Considerations

Any recording system is restricted in terms of the smallest and greatest signal and the lowest and highest frequency which it can record well. The latter is perhaps the more familiar limitation and is often referred to as the frequency response. The former is crucially important to recording for the purpose of obtaining signal amplitude information (sound pressure levels) and is called the dynamic range.

The lower level of the dynamic range is defined by the electrical noise generated within the microphone, its amplifier, the recording machine and the recording medium. This electrical noise, although derived from the instrumentation, if played through a loudspeaker, sounds like broad band hiss. When taking measurements of the recorded sound this noise will be added to the original sound thus introducing an error. Clearly, for this error to be small enough to be ignored, the sounds of interest must be recorded well above this level (which is called the 'noise floor').

The upper level of the dynamic range is simply the level relating to the loudest sound which can be recorded without significant distortion. On earlier tape recorders this dynamic range was typically in the order of 35 dB. DAT recorders will give 80 dB or more.

One of the greatest causes of failure to achieve a good recording in the case of unattended tape recording was that the sounds recorded were either too weak on the tape, making them in, or close to, the noise floor, or too strong, causing them to be distorted. In either case the recording was not clear making it difficult to identify the sounds and impossible to obtain accurate measurements from the tape. With a dynamic range of 80 dB this has become far less of a problem.

How to Make a Recording and Obtain Levels on Play Back

Recording

A signal must be passed from a microphone of suitable quality to the tape recorder. It is usual to amplify this signal between the microphone and tape since an unconditioned mic. output is very low. The most convenient form of amplification is usually a sound level meter (SLM) (assuming it has an AC output and is not of the 'autoranging' type). The signal, then, is collected by the microphone, amplified by the SLM and passed to the recorder. Note that no measurements are being made at this stage — the SLM is purely an amplifier. It is usually best to set the SLM to linear response for the sake of the recording. This will give an unweighted recording which can be filtered on analysis (eg dB(A)). It is not an uncommon mistake to make an A-weighted recording and then analyse the tape in A-weighting which gives 'double A-weighting'.

The first (and last) sound recorded should be the tone from the calibrator. In order to ensure that the tone is not overloading the SLM or recorder nor near the noise floor of either, the reading on the SLM and the recorder's record level meter should be high within each unit's dynamic range but not too near the top. In the case of a SLM this will be achieved using almost any calibrator since their levels are usually about 100 dB — well above a typical 30 dB SLM noise floor. The only thing to check is that the meter is not indicating an overload. Tape recorders usually give 0 dB as the maximum and nega-

tive figures to indicate the amount down from this maximum. For a given signal from the SLM, adjusting the tape's record level control to give, say, —6 dB is satisfactory.

Once this tone has been recorded it is essential that the record level control of the DAT is not adjusted since measurement of recorded sounds depends upon their relationship to this level. The noise of interest may now be recorded. If this is well below the calibrator's level — quite likely in relation to nuisance — it might be too near to the noise floor of either the SLM or tape for satisfactory recording.

Taking the recorder first, we have set the system up so that a tone from the calibrator of (say) 94 dB corresponds to a level of —6 dB on the tape. If the noise of interest was 35 dB then its level on the tape would be —65 dB (—6—(94-35)). This is OK for a DAT which records happily down to —80 dB but would be well into the noise floor of most ordinary tape recorders. In the latter case the noise of interest must be amplified before recording it. This is usually achieved using the SLM's full scale deflection (or range) control. It is OK to change this setting after recording the calibration tone — *so long as the changes are noted* — since changing the range changes the amplification of the meter's AC output by 10 dB multiples*. It must not be achieved by altering the record level control on the recorder since this allows infinitely variable changes of amplification and one has no way of knowing the magnitude of that change.

Dealing now with the SLM, and using the above example, it will be noted that the full scale deflection of the meter during recording of the calibrator's tone was 100 dB or above. A noise of 35 dB is 65 dB below this. The signal is now (assuming a typical SLM with dynamic range of 60 dB) well in the SLM's noise floor. In this case the DAT recorder will quite accurately record what it receives, but this will be the noise of interest drowned out by the SLM's electrical noise. The solution is the same (that is, to lower the full scale deflection) but it is interesting to note that with DAT recorders it is the SLM's that have become the limiting factor not the DAT recorder as is the case with conventional recorders. It should, of course be remembered that lowering the full scale deflection (FSD) will only provide an improvement until the SLM's ultimate noise floor is reached.

Once the noise of interest has been recorded a second calibration tone must be recorded. The FSD should be put on the same setting as was used for recording the initial tone.

Play Back

The sounds recorded on the tape will bear a known relationship to a sound of known magnitude (the calibrator) and this is the key to making measurements from the tape. The SLM is now used as a measuring instrument and the signal from the tape must be fed into the SLM. This is usually achieved by removing the microphone and connecting the recorder's output, via a suitable adapter, to the preamp.

The calibration tone at the beginning of the tape is firstly replayed and its level measured on the SLM. It is unlikely to be 94 dB (the calibrator's level in our example)

*One must be careful here because whilst it is common for the meter's AC output to change in accordance with the full scale deflection, sometimes this is not the case. Check with the instruction manual or manufacturer.

or −6 dB (the level shown on the record level meter during recording). The final calibration signal should then be measured and should be the same as the initial tone (or very nearly so). If it is not, then some procedural error has been made or the equipment is faulty. In either case the recording should be discarded.

If it is found that the calibration signal from the tape overloads the sound level meter even on its highest full scale deflection, then an attenuator may be inserted between the recorder and SLM (this usually fits between the preamp and the adapter mentioned above). If used, it is probably simpler to leave it in for the whole analysis (that is, for measurement of the calibration tone and noise) than to use it for some parts of the tape and not for others thus necessitating addition of different correction figures.

Measurements of the recorded noise can now be made. Since the SLM is now being used as a SLM the FSD (range) setting can be changed, in order to best fit the recorded levels, and the A-weighting filter used. In fact, any measurements can now be made as if a sound were being measured directly (eg, fast or slow response, octave band analysis etc.).

In order to convert from the numbers obtained from the tape to the sound pressure levels that caused them, use the following formula:

$$SPL = Lm + (Cc\text{-}Cr) - (FSD2\text{-}FSD1)$$

where Lm = Level as measured from the tape on play back.
Cc = Level of the calibrator's tone.
Cr = Calibrator level as measured on play back.
FSD1 = Full scale deflection of the SLM during recording of the calibration tone.
FSD2 = Full scale deflection of the SLM during recording of the noise of interest.

Practical Considerations of Recording and Analysis

We have found that the following points should be borne in mind when using the DAT recorders.

The DAT we use has a small speaker which gives only quiet levels when reproducing the highest recorded signals. In addition, due to the great dynamic range of the recorder, it has to reproduce levels varying by 80 dB. This makes the lowest levels impossible to hear even though they may be perfectly well recorded. For convenient analysis therefore an alternative means of reproduction is preferred. One method is to play the signal into a separate amplifier and loudspeaker such as is used for 'Hi Fi' reproduction or alternatively some of the large portable tape/radio players have suitable inputs and loud enough outputs (although, for quality, the former is better). Alternatively, headphones can be driven from the AC output of some SLM's. In this case the FSD control can sometimes be used as a coarse volume control.

It is possible, having measured the signal on the tape in order to determine the original sound pressure level, to replay the sound (through a loudspeaker in the presence of a SLM) at the level originally found in the complainant's house. This might be done in order to improve one's subjective opinion of the noise. However, we would

urge caution with this approach — one's opinion of a noise is intimately related to the location and situation under which it is experienced and even by the manner of presentation. (Loudspeakers and especially headphones neither reproduce nor present the sound naturally.) It has never been our intention to do this and this is a pitfall of reproduction in a court room. (See later for a discussion of what evidence we feel can be provided by the recording and play back in court.)

A recording can be made with A-weighting (this is sometimes necessary when measurements are required at the same time as the recording is made). In this case linear analysis on play back will give dB(A). However our ears usually receive unweighted sounds and apply their own 'weighting'. Listening to an A-weighted tape will make the sound unnatural and make low and high frequencies hard or impossible to detect. It is possible that a particularly annoying low frequency beat from a neighbours Hi Fi may not even be able to be heard on an A-weighted recording. It is therefore recommended that under normal circumstances linear recordings are made.

Obviously this problem of requiring linear reproduction for listening but A-weighted measurements means that these operations will need to be carried out separately (unless the signal is reproduced by an amplifier in parallel to the SLM).

Evidence that the Recordings are able to Provide

This subject lead to a great deal of discussion during the phone calls we received from other authorities since it is clearly crucial to the issue of using this information in nuisance investigation.

Frequently, enquiries related to the use of tape recordings in court and to legal considerations generally. This is not a new question which has arisen with the advent of DAT recorders. Any authority which previously used an analogue recorder would rely on the same arguments in respect of digital equipment. One difference though, is that the ability of some digital recorders to log the date and time of the recording removes one area of doubt.

However, the fact that nothing has changed is no reason not to review this matter. In essence, what must be considered is what evidence is being provided by the recording and how this is presented to the court. Also relevant is whether a notice is being defended on the basis of the recording (and other information) or whether a prosecution is being taken. It may seem a fine point, and even at the hearing this may not be made clear, but in defending a notice we are defending a judgement, the test of which lies in common law. This means that it must be proven on the balance of probabilities. A prosecution however is a criminal matter and needs to be proven beyond reasonable doubt. A higher burden of proof is therefore required.

Returning to the question of what the recordings are being used for and how this evidence is presented, we would stress that it has never been our intention, when making recordings of alleged noise nuisance, to reproduce them in the court (although we would certainly not rule out this action if we felt it appropriate in any case). Indeed, except in exceptional cases, we reuse the tapes so they would not be available even if the court felt it wanted to listen. We have based many nuisance judgements (both for and

against complainants) on evidence based on recordings but have not yet needed to rely on recordings for a prosecution. If we did, it would be our intention to explain to a court how this tool is used as part of an investigation as an aid to obtaining information upon which was based a sound decision.

One must be clear on what evidence can be obtained from a tape recording. We can obtain a time coded, calibrated recording, made at a specific location and we can identify the sound (by recognition). We can therefore state that at a given time, in a given location a particular type of sound existed and specify its levels. We cannot, from this evidence, determine the source of that sound. For example, in a terraced house, the source could possibly be on either side of the complainant's property. For information regarding the source we must start with the complainant's evidence. In this regard, if, as is often the case, a complainant's information has not been accurate in the past, or has been shown to be, or is suspected to be, not wholly true, then it is likely that the recordings will not be acceptable evidence. Personal visits may be the answer. What can be stated is that, in the expert opinion of the officer, the recordings are consistent (or inconsistent) with the complainant's information. This would require analysing the recordings for aural clues, level and frequency information, and satisfying oneself that the pattern of disturbance during the period of time that the DAT was left is similar to that shown by the noise diary sheets kept prior to this (although some variability must be accepted).

The Future

It has been stressed throughout that this recording technique is only a part of the investigation and evidence, and that it is only applicable in some cases. However it is by far our most used piece of noise equipment. The reason for its demand is not difficult to see. It is usually left with the complainant for about one week. Taking account of the time required to take it out, collect it and find time to analyse the tape this period can be double. With only 52 weeks in the year, only about 25 complaints can currently be handled in this way.

It is therefore our intention to obtain a second portable DAT, SLM etc., so that our capacity can be doubled. However the TCD-D10 costs about £1500.00 and there are other options. A cheaper solution but one which is far more restrictive, is to purchase a Sony DTC 750 DAT. This is a DAT recorder designed to be used along with a home Hi Fi costing about £400.00. It can be used in complainants' homes but is not so convenient as the TCD-D10 — it is not so easily portable, requires mains power and does not offer such a useful remote control. However it can be useful back at the office for analysing recordings made with the D10 thus improving the 'turn around time' of the monitoring equipment.

The 'ultimate set-up' would be to have two portable D10's with cheaper SLM's for field use and a DTC 750 at the office used in conjunction with an amplifier, speaker and parallel SLM, filter set and level recorder for analysis. One important point that should be borne in mind is just how time consuming analysing the recordings can be. For us, increasing our facilities beyond two DATs would probably be fruitless because we simply would not have the time to use them fully. Looking towards the future, other

recording mediums are becoming available or are promised such as DDC and recordable CDs. Video evidence may also be able to remove the doubt as to the source of the noise in some cases.

Conclusion

Our experience over the last two years has shown that this equipment can provide good results when used thoughtfully. DAT recorders alone are not the answer to all the problems of noise complaint investigation but they are an invaluable tool.

The views expressed in this article are those of the authors and not necessarily shared by Crawley Borough Council.

OBJECTIVE METHOD FOR ASSESSING NUISANCE CAUSED BY AMPLIFIED MUSIC: RESULTS OF FIELD TRIAL

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Introduction

In a previous issue of *Clean Air*[1] an objective method for assessing disturbance caused by amplified music was described. The method is intended to provide "independent" support for an EHO's subjective judgment. It was developed by the Open University[2], under a contract with the Department of the Environment which was managed by BRE, and takes account of: the noise level relative to background; time of day disturbance occurs; duration of disturbance; bass prominence.

The method was based on analysis of 29 cases, and the *Clean Air* article invited volunteers to test the method further in a field trial. About 40 EHOs contacted NSCA headquarters for information and they were sent a pack of pro formas to use when making assessments, and a note giving further guidance on using the method. The trial ran for about six months — ending in September 1992.

Twenty-seven completed assessment forms were returned to BRE for analysis, but of these several related to the same noise source heard in different locations. Although the method was developed to assess noise from next door neighbours, in the trial it was also used to assess nuisance in other circumstances including music from pubs and discos.

Results and Discussion

The EHO's subjective assessment of each alleged nuisance were on a four point scale:

1 = nuisance (definite)
2 = nuisance (marginal)
3 = not a nuisance (marginal)
4 = not a nuisance (definite)

The objective method produces a single number rating with the following interpretation:

>10 = nuisance (EHO 1)
5-10 = marginal (EHO 2/3)
<5 = not a nuisance (EHO 4)

To evaluate the method it is necessary to compare the subjective and objective ratings for the same cases. The results of this analysis are summarised in Table 1.

It can be seen that agreement is very good in all cases where the EHO considers the noise to be a "definite nuisance". The number of cases in the other categories is too small to draw firm conclusions, but the results seem promising. Agreement is least good in the "marginal" categories (2&3), perhaps indicating that the EHO's judgment takes account of more subtle factors than a simple objective method can.

EHO rating	number of cases	number of cases where EHO and objective rating agree
1	18	18
2&3	6	2
4	3	2

Table 1. Comparison of EHO and Objective ratings.

Conclusions

The interest expressed in the objective method indicates that there is a need for a method which provides "independent" support of an EHO's judgment of nuisance. The results of the field trial are promising, but the number of cases evaluated is too small to draw firm conclusions on the reliability of the method. It will be necessary to conduct further trials, and possibly modify the method if found necessary, before the method can be offered for general use.

Acknowledgement

The author wishes to thank the EHOs who took part in the field trial, and the NSCA secretariat for administrative support.

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THE PHASING IN OF UNLEADED PETROL IN THE UNITED KINGDOM

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Introduction

Lead in petrol first became a British policy issue in 1971 when the Chief Medical Officer to the government recommended that airborne concentrations of lead should not be allowed to increase above existing levels[1]. At that time the lead content of petrol was 0.84 grams per litre (g/l) and it was agreed subsequently to reduce it in stages to 0.45 g/l by 1976. This deadline was later postponed because of the 1973 oil crisis until 1981 (and subseqently amended to 0.40 g/l). Lead in petrol also became a European Community (EC) issue in 1971 as a result of proposed German legislation to reduce the lead content of its petrol to 0.40 g/l in 1972 and then 0.15 g/l by 1976[2].

After many years attempting to resolve differing national viewpoints concerning how much lead should be permitted in petrol a Community Directive was finally agreed in 1978 which set the maximum lead content of petrol that could be sold within the EC at 0.40 g/l, to be met by January 1981. Member states were allowed to set an upper limit between 0.40 g/l and 0.15 g/l, but they could not insist on less than 0.15 g/l[3]. The UK adopted the latter level from January 1986. The limit of 0.15 g/l was chosen because it was near the lowest level usable in petrol engines at that time without requiring them to be specially adapted (eg replacement of soft metal valve seats, engine retuning). The inclusion of the lower limit ensured that no barriers to trade in motor vehicles would be created by one member state insisting on selling only unleaded petrol.

Public and Government Support for Introducing Unleaded Petrol

The view that petrol should become "lead-free" gained widespread public support in the UK in January 1982 when the pressure group CLEAR, the Campaign for Lead-Free Air, was established[4]. This pressure group chaired by Des Wilson, was highly effective in mobilizing public and media involvement and in lobbying British and EC politicians to argue the case for introducing unleaded petrol. Its aims were supported by many other environmental pressure groups such as Friends of the Earth and the NSCA. Its public campaign together with the recommendations of the ninth report published by the Royal Commission on Environmental Pollution[5] in April 1983 encouraged the British government — within 30 minutes of the publication of the report whose recommendations had been leaked earlier — to propose the EC Directive be amended to remove the minimum limit it contained so as to enable the widespread use of unleaded petrol throughout the EC[6]. The Government decision was taken even though some of its own conservative MPs opposed it because of the increased petrol consumption and vehicle production costs likely to be incurred.

While the UK was arguing for the introduction of unleaded petrol for health reasons in 1983, West Germany was also pushing for the introduction of unleaded petrol as soon as possible because of alarming damage to its forests. To reduce exhaust emissions, which were blamed in part for the forest damage, the Germans intended to intro-

duce catalytic converters on new models of cars from 1989. Since these do not function effectively with leaded petrol (lead 'poisons' the catalyst), then an early ban on lead in petrol was needed. After many delays in agreeing a Directive, West Germany threatened to break EC regulations and take unilateral action. Under such pressure a final Directive was agreed in 1985 which allowed unleaded petrol to be introduced in 1986 but did not *require* it to be introduced until 1989. The EC Directive required unleaded petrol to be 'widely available' by October 1989, which was interpreted by the government as being on sale at petrol stations at least every 50 kilometres. This date was to coincide with the requirement that all new models of car should be able to run on unleaded petrol. All new cars, as distinct from new models, were given to October 1990 to conform.

Unleaded Petrol Goes on Sale in the UK in 1986

Although the Government claims it led the way in pressing the EC to introduce unleaded petrol, its subsequent actions to encourage the use of unleaded petrol within Britain were not as vigorous as some other Community members. For example, by the beginning of 1986, West Germany had established a network of petrol stations selling petrol, albeit mostly regular (90/91 octane) petrol, which had enabled unleaded petrol to capture 20% of total sales. In contrast, the United Kingdom's first station selling unleaded petrol was not available until June 1986 and it took until June 1989 before unleaded petrol reached 20% of total sales.

As happened in West Germany, Denmark and The Netherlands, it was not until the Government took direct action of adjusting the tax differential between unleaded premium (95 octane) and four-star leaded petrol (97 octane) that sales rose significantly. In 1986, petroleum companies pointed out it cost 3-6 pence per gallon more to produce unleaded petrol compared to leaded petrol as it needs more refining. Unless the Government was willing to offset this amount, unleaded petrol would be more expensive than four-star petrol. The need for positive price discrimination in favour of unleaded petrol so as to effect the speedy introduction and widespread use of unleaded petrol was argued by the NSCA[7].

Finally, in March 1987 the government introduced a tax (duty plus VAT) differential of 5 pence which meant that unleaded petrol cost the same as two-star leaded petrol (90 octane) at the pumps (Table 1). However, this had little impact on sales of unleaded petrol or on the willingness of petrol stations to stock unleaded petrol. For example, in March 1987, there were 211 stations selling unleaded petrol and this rose to only around 600 stations by December 1987 (out of 20,200 stations operating). In 1987, unleaded petrol was mainly being stocked for tourists, especially the West Germans.

Throughout 1987 there was a general lack of awareness amongst the public concerning which cars could run on unleaded petrol without any modification (around 10%), what modifications were required by cars in order that unleaded petrol could be used, and the locations of petrol stations selling unleaded petrol. This prompted CLEAR to launch a three-year programme of regional — later to become national — lead-free petrol weeks. These involved other environmental groups, local authorities, MPs, motor manufacturers and petrol companies in trying to encourage and educate the public into using unleaded petrol. Lack of information was believed to be a major

Table 1: Tax differentials between unleaded and four-star leaded petrol introduced in the March budgets and the annual unleaded sales as a percentage of total sales.

Year	Pence/gallon			Pence/litre			Annual unleaded sales (%)
	Duty	VAT	Total diff.	Duty	VAT	Total diff.	
1987	4.36	15.0%	5.01	0.96	15.0%	1.10	0.1
1988	9.18	15.0%	10.56	2.02	15.0%	2.32	1.1
1989	12.36	15.0%	14.21	2.72	15.0%	3.13	19.4
1990	13.60	15.0%	15.64	2.99	15.0%	3.44	34.0
1991	15.64	17.5%	18.38	3.44	17.5%	4.04	41.1
1992	19.86	17.5%	23.34	4.37	17.5%	5.13	46.0[a]

[a] author's estimated value

Source: Information supplied by UK Petroleum Industry Association Limited

reason for many motorists not using unleaded petrol or failing to convert their car if that was technically possible.

In the Chancellor of the Exchequer's budget of March 1988, the Government introduced a 10.6 pence per gallon differential in favour of unleaded petrol compared with four-star leaded petrol. This produced a price differential of 5-6 pence for the motorist at the pumps. An intensive publicity campaign by CLEAR focusing on the adverse effects of lead on health, especially young children, helped to raise public awareness of the need to reduce lead emissions in the air and prompted more people to convert their cars to run on unleaded petrol. Conversion costs were relatively small for vehicles already engineered to be able to run on unleaded petrol. The motorist had only to have the engine timing adjusted to run on the 95 octane rating of unleaded petrol rather than the 97 octane of four-star leaded petrol. For other cars, especially older ones, the conversion costs were higher. Sales of unleaded petrol climbed slowly from less than 1% of total sales at the start of 1988 to around 3% by the end of the year (Figure 1). During the same period the number of petrol stations selling unleaded petrol rose from 600 to 3,000.

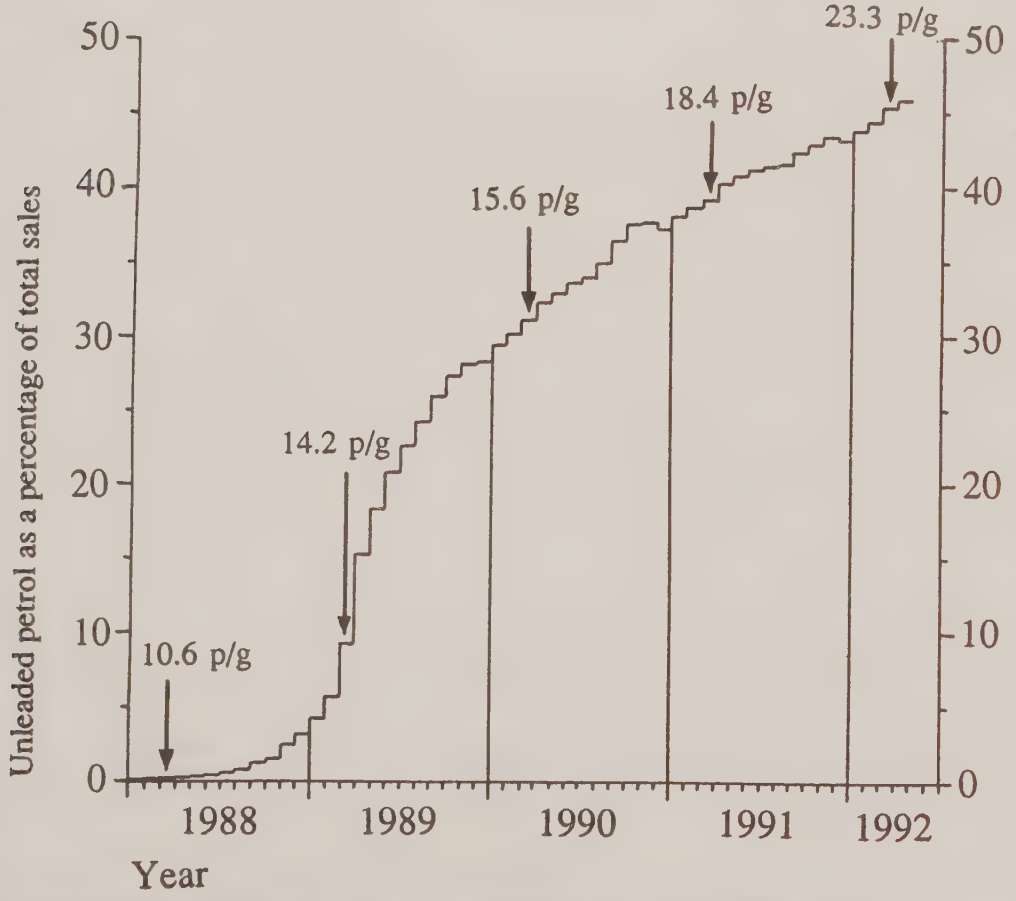
In his 1988 budget speech the Chancellor urged petrol companies to make use of the price differential "by vigorously promoting the use of lead-free petrol". This created some rivalry between petrol companies who conducted advertising campaigns for their unleaded petrol, offered information packs and even introduced freephone information lines for motorists wishing to find out whether their cars could run on unleaded petrol (Texaco introduced a freephone line as early as 1986). Around this time it was estimated that two-thirds of the UK's cars were potentially capable of running on unleaded petrol.

Phasing Out of Two-Star Petrol in 1989

The March 1989 budget introduced a 14.2 pence tax differential between unleaded and four-star leaded petrol which produced an attractive 10 pence per gallon price differential at the pumps. At the same time, the tax on leaded two-star petrol, which had been taxed at a lower rate than four-star, was placed on a par with four-star. Petrol stations

decided immediately to withdraw two-star petrol (90/91 octane), which by then accounted for only 7% of total sales anyway, and to use the freed pump and tank for unleaded premium petrol (95 octane). Several other European countries had already withdrawn the two-star grade of leaded petrol and substituted it with regular unleaded petrol having the same octane rating, including Germany as early as February 1988. As a result of withdrawing two-star petrol, the number of UK petrol stations selling unleaded petrol leapt from 4,576 to 7,617 over a two-week period in March 1989. The increased availability and lower cost of unleaded petrol caused sales of unleaded petrol to increase from nearly 6% in February 1989 to 15% by April (Figure 1). The withdrawal of two-star leaded petrol in the UK caused few problems for motorists using it since their cars were those most able to run on unleaded premium petrol with its higher octane anyway. The move towards using unleaded petrol was rapid throughout 1989 with unleaded sales increasing from 4% in January to 28% by December. Campaigns by the media helped accelerate the trend by publicising and praising organisations and companies which converted their cars to run on unleaded petrol or, in the case of garages and motor manufacturers, who offered to adjust vehicles free of charge.

Figure 1: Monthly unleaded petrol sales as a percentage of total sales in the United Kingdom since January 1988. The tax differentials (pence/gallon) between unleaded and four-star leaded petrol and the dates these were introduced are shown. Price differentials at the petrol pumps are usually 3-6 pence less than the tax differentials as this sum is used by manufacturers to offset the higher cost of producing unleaded petrol.



Source: Information supplied by UK Petroleum Industry Association Limited.

Around this time some petroleum companies introduced a 'super' unleaded (98 octane ie an octane higher than four-star) petrol which allowed any car capable of running on unleaded petrol to do so without the need to adjust engine timing and with no loss of performnace. A media scare in February 1990 claiming that some poor quality unleaded petrol (containing little or no detergent additive) was damaging high-performance (fuel-injected) engines helped to establish a demand for super-unleaded petrol. This petrol is more expensive to produce so was sold initially at about 2 pence per gallon less than four-star and accounted for only 3.7% of total petrol sales in 1990 and 4.8% in 1991. In some countries, including Denmark, The Netherlands and especially France, super unleaded petrol contributes a significant proportion of total unleaded sales.

Unleaded Petrol on Sale at Most UK Petrol Stations in 1990

By the start of 1990, 90% of Britain's petrol stations were selling unleaded petrol (many of the remainder being rural one-pump stations) and unleaded sales reached 28%. At that point, the upward trend in sales of unleaded petrol appeared to slow down and indicated the need for the Chancellor to inject some further impetus. A small increase in the tax differential to 15.6 pence produced a difference for the motorist of around 13-14 pence per gallon at the pumps after the March 1990 budget. This ensured unleaded petrol sales continued to rise, though more steadily than in the previous year. The turnover of annual sales of all new cars, which now had to be capable of running on unleaded petrol, helped too. However, from November 1990 sales of unleaded petrol slowed significantly — even falling by 0.5% in December 1990 — before continuing a slow rise.

Price differentials between unleaded and four-star petrol are considered the key to persuading the public to use unleaded petrol, if their cars are capable of running on it. Prior to the March 1991 budget, environmental groups and petrol companies had campaigned strongly for the Chancellor to create a differential of 20 pence per gallon at the pumps. Consequently, they were disappointed when the Chancellor increased the tax differential to only 18.4 pence in March 1991. Although unleaded sales rose from 38% in January 1991 to 43% by the end of the year, this 5% increase was the smallest annual increase for three years. The year even ended with a slight fall (0.2%) in unleaded sales in December. Faced with the slow down in the take up of unleaded petrol throughout 1991 the Chancellor finally increased the tax differential in the March 1992 budget to 23.3 pence producing the highly attractive price differential of 20 pence per gallon at the pumps.

Reductions in Lead Emissions and Airborne Concentrations

Reducing the lead content of petrol produced dramatic reductions in lead emissions and airborne lead concentrations in the UK. Emissions of lead from petrol-engined road vehicles decreased steadily from a peak of 8,400 tonnes in 1976 to 6,500 tonnes in 1985 and then plunged to 2,900 tonnes during 1986 before continuing to decrease to 2,200 tonnes in 1990[8]. These reductions were achieved even though petrol consumption increased during this period by 44%. Measurements of airborne lead from an eight-site national network revealed average concentrations fell by 55% between 1985

and 1986, following the reduction of lead in petrol from 0.40 to 0.15 g/l at the end of 1985. Airborne lead levels at the central London background monitoring site fell by over 80% through the 1980s[9].

The Future

Unleaded petrol sales in the UK will account for half of all petrol sales by the end of 1992 — a figure reached already by seven other European nations (Austria, Denmark, Finland, Germany, The Netherlands, Sweden and Switzerland) and one that was reached a decade earlier by Canada, Japan and the United States. The United Kingdom and the rest of Europe still have a long way to go to match the American situation where unleaded petrol accounts for around 90 per cent of all petrol sales and some major petrol companies have discontinued production of leaded petrol.

Table 2: Unleaded petrol as a percentage of total petrol sales in selected European countries, 1990 and 1991.

Country	1990[a] %	1991[b] %	Difference %
Denmark	57	65	+8
Finland	52	58	+6
France	13	26	+13
Germany	68[c]	81[d]	+13
Italy	5	7	+2
Norway	35	48	+13
Spain	1	3	+2
Sweden	52	63	+11
Switzerland	50	64	+14
United Kingdom	33	41	+8

[a]January-September period [b]full calendar year [c]West Germany [d]Reunified Germany

Source: Information supplied by UK Petroleum Industry Association Limited

A realistic assessment of the UK's performance in Europe is to compare it with the three other large European petrol consumption nations, namely France, Germany and Italy. Together with the UK, these four countries account for around three quarters of all Europe's petrol consumption. Table 2 highlights that UK unleaded petrol sales of 41% in 1991 exceeded both Italy (only 7%) and France (26%), the latter selling mostly super unleaded rather than premium unleaded petrol. Reunified Germany is the trailblazer with unleaded petrol sales reaching an impressive 81%. However, 39% of the unleaded petrol sold is regular grade (91 octane) so in terms of premium and super unleaded percentage sales the UK and Germany are similar. Generally it seems that although unleaded petrol sales in the UK were initially slow in comparison with many other European nations, they now compare much more favourably.

Continued publicity to persuade motorists to convert to using unleaded petrol (and retrofit catalytic converters), if they are able to do so, could still be effective although there are many millions of motorists who have already withstood the temptation of con-

version for several years. Older cars that could be converted to premium unleaded include those which after conversion would need every fourth filling of the petrol tank to be leaded petrol to provide lubricant for soft metal valve seats. A further widening of the fiscal differential may help to persuade this group of motorists to use unleaded petrol.

Some motorists have resisted using premium unleaded petrol even though their cars could do so, arguing that vehicle performance is fractionally impaired because of the lower octane rating of premium unleaded in comparison with four-star petrol. A publicity campaign aimed at encouraging motorists driving cars which were engineered to be capable of running on unleaded but designed for performance for 97/98 octane petrol to switch to super unleaded (98 octane) could be effective, especially if super unleaded were to benefit from a more favourable price differential than at present. Since October 1990 cars in the EC have been engineered and designed to be able to run on premium unleaded (95 octane) petrol so there is no improved performance to be gained from using four-star petrol with its higher octane.

The major factor ensuring sales of unleaded petrol in the UK will continue to rise as the EC Directive requiring all new cars sold from January 1993 onwards be equipped with catalytic converters which in turn require the use of unleaded petrol to be effective. For comparison, only 5% of new cars sold in 1990 were fitted with catalytic converters and 17% in 1991. By mid-1992 around 600,000 cars out of a UK total of 23.3 million were fitted with catalytic converters and the numbers will rise rapidly during 1993 when another 1.6 million new vehicles, all fitted with catalytic converters, will be registered (or more if annual car sales begin to return to the peak sales of 2.3 million in 1989.)

Acknowledgements

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THE CHANGING FACE OF GLASGOW'S AIR QUALITY

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Thirty years ago the quality of Glasgow's air was described as, ". . .the dirtiest atmosphere in Scotland"[1]. In 1961 few people would have disagreed. Glaswegians were, by then, well accustomed to the smogs long before Thomas Galbraith, the then Secretary of State at the Scottish Office, expressed his views.

Smog occurrences and their effect on health have been studiously chronicled by former Glasgow Corporation Medical Officers of Health. The smog episode of 1909 received particular attention. A series of exceptionally bad smogs in that year contributed to a rise in the death rate from respiratory ailments from 35 in October to 233 in November (Table 1)[2]. This accounted for 49% of the total death rate[3]. Well documented episodes also occurred in 1912[3] and 1929[4]. The 1929 event occurred despite an already noticeable improvement in the city's air quality (Figure 1).

Table 1: The Effect of the 1909 Glasgow Smog on Human Health

	Deaths in Glasgow		Weather in Glasgow	Mean Temperature
	No.	Rate		Glasgow °f
October				
Weekly Average	35	2.1	Clear to Dull	49.2
Week Ended				
6th November	61	3.6	3 days fog	45.0
13th November	75	4.5	Dull, slight fog	44.0
20th November	138	8.3	5 days dense fog	30.7
27th November	233	13.9	Hazy	40.3
4th December	171	10.2	Hazy or wet	42.3
11th December	198	11.8	4 days fog	37.0
18th December	137	8.2	Slight haze	38.5
25th December	95	5.7	Slight fog and clear	31.9
1st January	93	5.6	Wet or clear, 1 day fog	43.1

The adverse effect of the smogs on the health of Glaswegians prompted one Glasgow newspaper editor to automatically allow more space in the obituary notices whenever there was fog[5]. Similarly the state of Glasgow's then poor air quality persuaded Sir William Burrell to place a condition on the bequest of his art collection to the people of Glasgow, that it "should not be housed within 10 miles of the city, on account of the damage they would suffer from air pollution"[5].

Prior to the *1956 Clean Air Act*, air quality was so acute that every person in the city was breathing in a staggering 30 ozs of soot each year[6]. This unacceptable situation, coupled with the provisions of the *Clean Air Act* and emotive newspaper headlines of 'Suicide in the City Air'[7] and 'Death in the Air'[8] prompted the then Glasgow Corporation to introduce the first Smoke Control Order in Scotland on 15 October 1959 in the city centre. To monitor the effectiveness of the Smoke Control Areas, a city wide air quality monitoring network was started in 1961. This network complemented the existing monitoring of grit and dust started in 1918.

Figure 1: Total Solids Deposition for Glasgow City

Despite remedial actions taken by Glasgow Corporation, to increase the number and awareness of Smoke Control Areas and encourage the use of smokeless fuels, the quality of Glasgow's air in the early 1960's still attracted criticism. In 1959 the most noticeable influence on the health of Glasgow's population still remained the smog[9]. A 24-hour 'fog day and night' was estimated to cost Glasgow at least £1,000,000 at this time through losses in production, cuts in wages, overtime for employees, restriction on transport, and the decline in revenue for shops, warehouses, factories and other centres of commerce[10]. Maximum daily averages for sulphur dioxide (SO_2) and smoke of 2693 $\mu g\ m^{-3}$ and 5343 $\mu g\ m^{-3}$ respectively, recorded in 1961 gave an indication of the extent of the problem at that time.

In 1961-62 SO_2 and smoke levels exceeded 500 $\mu g\ m^{-3}$ on no less than 10 and 21 occasions respectively. Thirty years on air quality has shown a noticeable improvement in ambient SO_2 and smoke concentrations and a marked reduction in prevalence of smogs and fogs. By 1992 Glasgow District Council expects to have achieved a 100% coverage of its area by Smoke Control Orders. Figure 2 shows that since 1961 ambient SO_2 and smoke levels have diminished considerably. Although a control in emissions of SO_2 and smoke has caused the decline in levels, subsequent studies have shown that an important control on pollution levels is exerted by the topography of the Clyde Basin in conjunction with temperature inversions[11]. Today the Environmental Health Department currently monitors SO_2 and smoke at 14 sites. Previously levels were measured at 42 different sites since 1961.

The improvement in the city's air quality has now focussed attention on other issues. Since the introduction of the *Clean Air Act*, a remarkable transformation has taken place in air quality in Glasgow, and other cities. The previous problem of smoke pollution predominantly from domestic coal fires has now been largely abated. At the same time, however, emissions of a whole range of other pollutants from motor vehicles

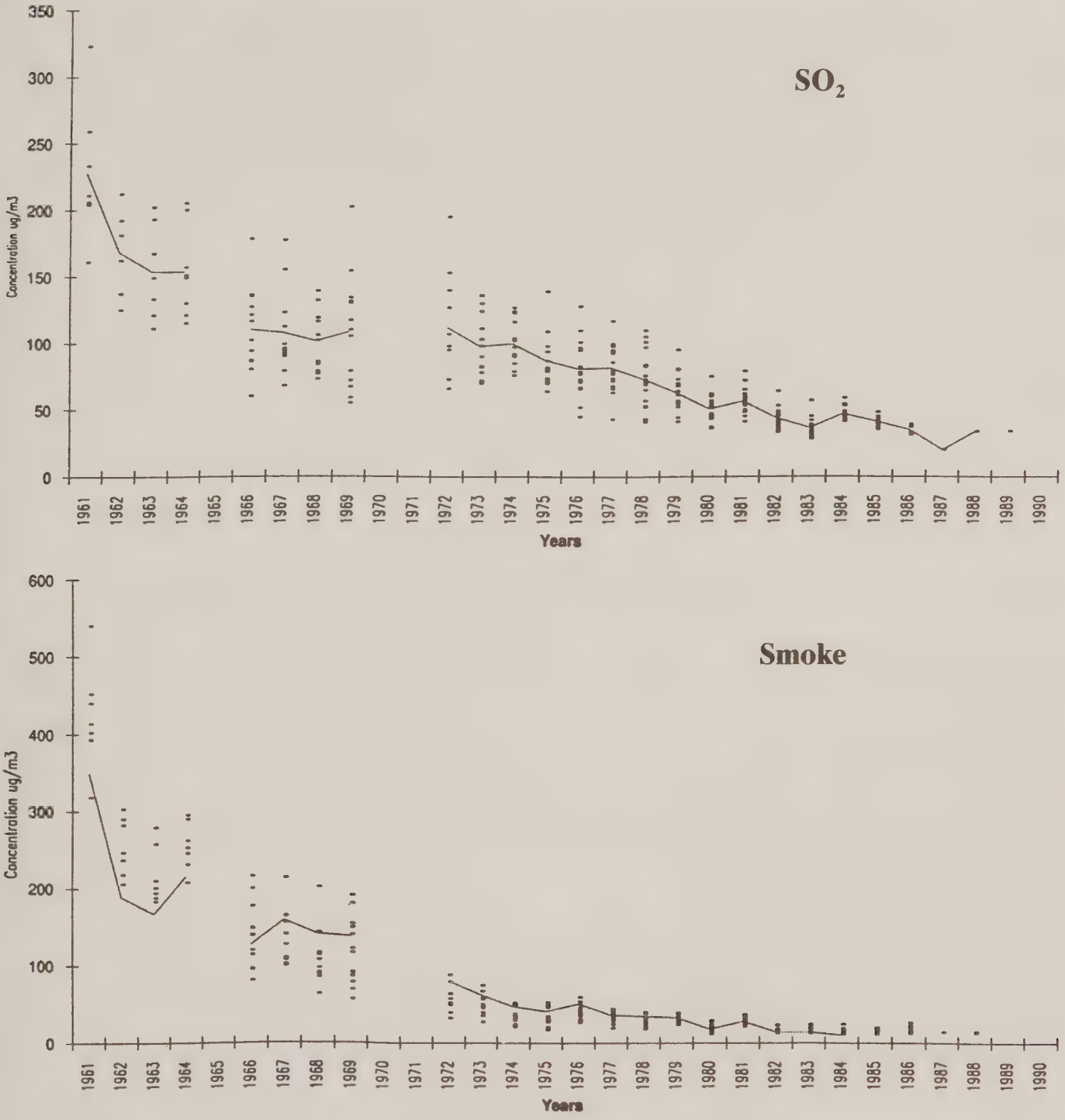

Figure 2: Concentration of SO_2 and Smoke in Glasgow City

have increased substantially introducing a new and important feature in respect of effects of urban air pollution on human health[12]. There is now a significant difference in the importance of past and present air pollution problems. Emissions from motor vehicles occur within the breathing zone of people in streets, and exposures at least to primary pollutants such as carbon monoxide (CO) and oxides of nitrogen (NO_x) have been found to be elevated and possibly harmful to health at one site in the city. Building on its ongoing interest in monitoring SO_2 and smoke levels in the city the Environmental Health Department has enhanced its air quality monitoring programme to include investigation of pollution from motor vehicles.

An extensive nitrogen dioxide (NO_2) diffusion tube survey in 1986, carried out by Warren Spring Laboratory (WSL) was undertaken in Glasgow with the assistance of the city's Environmental Health Department and the surrounding local authority areas of Renfrew, Monklands, Hamilton and Motherwell. In all 145 sites were monitored. Maximum levels (>254 μg m^{-3}) were recorded around the city centre (Figure 3). On the basis of the results, WSL decided to install a chemiluminescent analyser located within the highest concentration zone of the city in 1986 as part of its NO_2 EC Directive monitoring network.

The annual average NO_2 levels for 1987, 1988 and 1989 were 58, 56 and 51 μg m^{-3}, with 98 percentile levels of 130, 107 and 115 μg m^{-3} respectively. The number of hours of exceedences greater than 200 μg m^{-3}, the EC Directive limit value, were 40, 6 and 34 during these years. Levels have not breached the EC Directive, although maximum hourly levels of 404 μg m^{-3} in 1987 and 408 μg m^{-3} in 1989 show that the World Health Organisation (WHO) NO_2 1 hour guideline of 400 μg m^{-3} has been marginally exceeded on isolated occasions.

When the 1 hour NO_2 means are compared to new Department of Health air quality guidelines it can be seen that Glasgow's air quality could be described as "poor" for around 80 hours over the years 1987-89 inclusive in relation to NO_2. Carbon monoxide

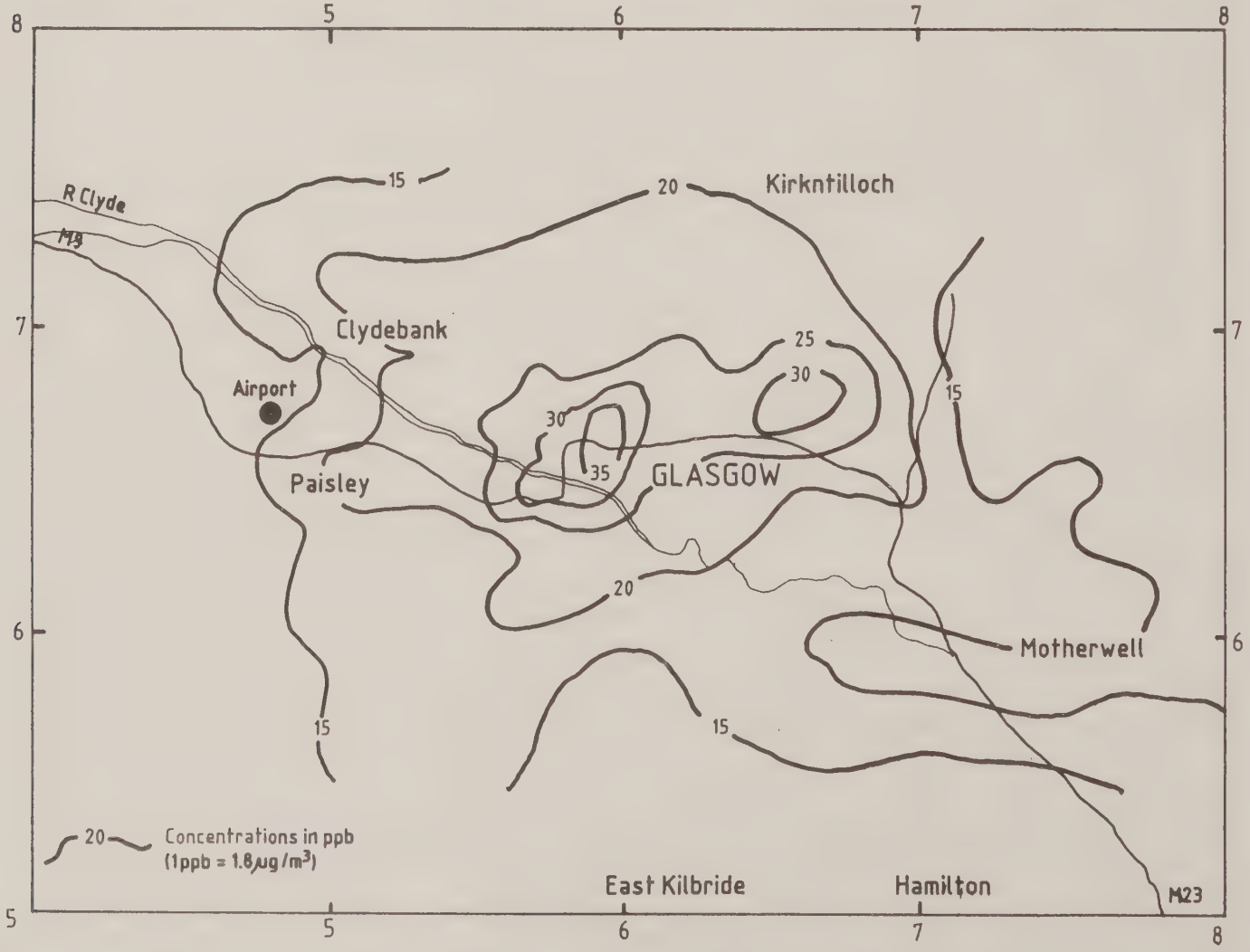

Figure 3: NO_2 Levels in Glasgow City

levels for 1989/90 for the city have similarly shown isolated exceedences of WHO guidelines. On two separate days the WHO 8-hour average was 13.3 mg m^{-3}. The annual arithmetic mean for the year was 1.5 mg m^{-3}.

It is clear from monitored air quality data that past SO_2 and smoke problems in the city have now diminished considerably from the smog days prior to the 1960's. The city's Environmental Health Department, in conjunction with WSL has responded to the increased need to monitor pollution from other sources, including road traffic and industry. A detailed history of air quality in Glasgow is currently being prepared by the Scottish Division of the NSCA.

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MEMORANDUM ON LIAISON ARRANGEMENTS BETWEEN HM INSPECTORATE OF POLLUTION AND LOCAL AUTHORITIES* CONCERNING THE IMPLEMENTATION OF THEIR RESPECTIVE FUNCTIONS UNDER PART I AND III OF THE ENVIRONMENTAL PROTECTION ACT 1990

1. This memorandum has been drawn up under the aegis of the HM Inspectorate of Pollution/Local Authority Enforcement Liaison Committee (IPLA), of which NSCA is an observer member, and has been endorsed by HM Inspectorate of Pollution (HMIP), the Institution of Environmental Health Officers, the Association of District Councils, the Association of Metropolitan Authorities and the Association of Port Health Authorities.

2. HMIP and local authorities have the common objectives of minimising environmental pollution, which is achieved through separate control regimes and can best be secured by co-operation between the two regulatory bodies. This memorandum sets down the main responsibilities of HMIP and local authorities so as to ensure effective liaison in carrying out their respective functions under Parts I and III of the *Environmental Protection Act.* Paragraphs 4 and 6 below specify certain basic principles; paragraphs 5 and 7 detail actions to be taken by both parties.

3. The memorandum will be reviewed periodically by IPLA. HMIP Inspectors and Environmental Health Officers** should raise any concerns they have over the implementation of the memorandum with their IPLA representatives.

HMIP

4. District, Borough, Metropolitan and City Councils are the democratically elected local bodies responsible for environmental pollution issues. They also have, in particular, a statutory duty under section 79 of the 1990 Act to inspect their areas and deal with any statutory nuisances and to investigate complaints of a statutory nuisance, and they often undertake a range of environmental pollution monitoring. As a general principle, therefore, HMIP should liaise with each local authority about all matters relating to HMIP responsibilities in its area which may have a significant impact on the local environment.

   HMIP Inspectors should also bear in mind that certain decisions they take may have a significant impact on matters of local authority concern. For example, if an HMIP-regulated (Part A) process is considered to warrant exemption because its releases are judged to be trivial, this will generally mean that the process will be subject only to statutory nuisance control.

   Liaison with local authority Environmental Health Departments will often lead to valuable assistance being provided to HMIP Inspectors by EHOs.

5. In particular:

   HMIP Inspectors should liaise with the relevant local authority environmental health functions over any justifiable complaints from local people about an HMIP-regulated process and keep the authority in touch with developments.

When a complaint/enquiry about a local authority-regulated process is initially made to an HMIP office, HMIP should pass the matter to the appropriate local authority to deal with, and should notify the complainant/enquirer accordingly.

HMIP Inspectors should keep the relevant local authority informed of any major developments in relation to HMIP-regulated processes in its area, such as significant plant malfunctions or breaches of authorisation conditions. Where such incidents could potentially have a serious effect on the local community, the local authority should be advised without delay.

Every local authority should be given the name of the Inspector responsible for each HMIP-regulated process located in its area and should be informed when those details change. HMIP should also notify local authorities of any other changes to the Inspectorate, such as changes to its regional structure or any re-location of regional offices, and notify a contact point in each divisional office who is responsible for the divisional HMIP register.

HMIP should provide local authorities free of charge with copies of such papers they have which describe the BPM (best practical means) already established for any process transferring from Alkali Act to local authority control. HMIP should aim to supply this information for individual processes within two weeks of any request. HMIP should aim to deal with a request for information about all processes passing to local authority control within a particular local authority's area within two months of being asked. Requests should be made to the relevant Divisional (formerly Regional) Office*** of HMIP.

The appropriate Principal Pollution Inspectors within HMIP Regional Offices*** should meet annually with the Chief Environmental Health Officers for the local authorities in the region. All HMIP Inspectors should seek to develop close working relationships with environmental health officers in their region.

Local Authorities

6. Local authority environmental health officers will often be the first port of call for public complaints or concerns. Where these relate to an HMIP-regulated process, the environmental health officer should inform HMIP, which will be responsible for responding. HMIP should provide the local authority with details of its response (including a copy of any written response).

HMIP is responsible for what are generally the more technically complex processes. While it is important that there is liaison between EHOs and Inspectors, and there is scope for sensible exchange of information, EHOs should not expect HMIP Inspectors to be a regular source of advice on matters for which the local authority is the responsible body.

7. In particular:

EHOs should liaise with the relevant HMIP Inspector over any justifiable complaints they receive from local people about an HMIP-regulated process.

EHOs should check the information on the local authority's copy of the register of HMIP-controlled (Part A) processes before asking HMIP for any further information (eg monitoring data) about any Part A process.

Every local authority should give the relevant HMIP regional office a contact for a) pollution control issues, and b) the local authority register of HMIP-regulated processes.

If they have not already done so, local authorities should inform HMIP regional offices of the place where the register is held, so that applicants for Part A authorisation can be informed.

Local authorities should inform the relevant HMIP regional office as soon as possible after they have decided an application which relates to a process formerly subject to HMIP Alkali Act control.

All EHOs should seek to develop close working relationships with the HMIP inspectors in their area.

* includes port health authorities

** this is a generic term which should be taken to include all local authority officers enforcing local authority air pollution control (ie appointed under section 16 of the Environmental Protection Act)

*** HMIP Divisional Offices are at Bedford, Bristol and Leeds. Regional Offices are at Bedford, Bristol, Cardiff, Lancaster, Leeds, London and Runcorn

UPDATE

NATIONAL PROGRAMME FOR CO_2 EMISSIONS

The Government has published a discussion document on ways of returning emissions of CO_2 and other greenhouse gases to 1990 levels by the year 2000, as set out in the Rio Convention. The document is intended to stimulate debate about ways in which individuals and organisations can voluntarily help to achieve targets and sets out options for Government measures.

The document examines sources of CO_2 and trends in future emissions. (The Government's latest projections of energy demand and CO_2 emissions are published in *Energy Paper 59*). In 1990 UK CO_2 emissions were 160 million tonnes carbon (MtC), and predictions of emissions by 2000, which incorporate current trends in energy efficiency, are in the range 157-179 MtC.

Measures that will reduce energy consumption in the home, industry, commerce and the public sector are put forward, and views invited on the role voluntary, business and trade groups can play in encouraging energy conservation. Options for Government measures put forward include:

- Extending the Energy Saving Trust and information initiatives.
- Standards for energy using equipment.
- Carbon/energy tax as proposed by the EC.
- Increased Non-Fossil Fuel Obligation for Renewable Energy Sources.
- Speed limiters for cars.
- Transport fuel price rises.
- Reflecting fuel efficiency in the price of cars.

In drawing up a national programme, main criteria will be that savings should be made in the most cost effective way possible and achieved as far as possible without Government intervention. Economic instruments will be utilised in preference to regulation and the programme should be in accordance with Government energy policy and flexible enough to allow for revision if necessary.

In contrast, the US has already produced a Plan for Global Climate Change and ratified the Framework Convention on Climate Change. The UK may not ratify until the end of 1993.

URBAN AIR QUALITY IN THE UNITED KINGDOM

The report of the independent Quality of Urban Air Review Group (QUARG), published in December 1992, looks at the current state of urban air quality and air quality monitoring. Concern about urban air quality has been brought about by the rise in motor vehicle traffic, but the report advises that the introduction of vehicle emission controls alone will not be enough to reduce urban traffic pollution to acceptable levels. Experience in the US has shown that there is a danger that any controls will be offset by growth in traffic levels.

The report advocates the continued expansion of the Enhanced Urban Monitoring Network, and recommends that for adequate national coverage at least 24 of the UK's major towns and cities should be monitored. The Group also found that current knowledge is insufficient to establish a quantitative link between changes in national pollutant emissions and changes in urban air quality, so recommends the establishment of a research programme to examine pollution emissions, chemistry and dispersion.

"Urban Air Quality in the United Kingdom", First Report of the Quality of Urban Air Review Group, from Department of the Environment, PO Box 135, Bradford, West Yorkshire BD9 4HU.

SULPHUR DIOXIDE, ACID AEROSOLS AND PARTICULATES

The second report of the Government Advisory Group on the Medical Aspects of Air Pollution, published in November, examines sulphur dioxide, acid aerosols and particulates. It advises that when levels of SO_2 exceed 400 ppb asthma sufferers may experience chest tightness, coughing and wheezing. These levels are regularly exceeded in some parts of the UK. The report recommended that the Department of Environment Guideline for SO_2 be adjusted, with the "very poor" air quality threshold being lowered from 499 ppb to 399 ppb, and that in such conditions warnings should be issued and asthma sufferers should limit outdoor exposure.

Particulates and acid aerosols were also examined, but there is currently insufficient data regarding the levels and effects of these. The Group recommended a monitoring network for acid aerosols.

The Department of Environment have published a leaflet *"Wintertime Smog"* which looks at the causes and effects of smog and lists ten measures the public can take to help prevent it.

"Sulphur Dioxide, Acid Aerosols and Particulates", Second Report, Advisory Group on Medical Aspects of Air Pollution Episodes, HMSO, £30.00.

ENVIRONMENTAL REPORTING

The National Environment Unit of KPMG Peat Marwick has surveyed the 100 top companies in Canada, the UK and the US to establish the level and quality of environmental reporting in each country. The Unit considers that the demand for environmental reports is rising with increasing awareness amongst the public, investors and regulators.

Of the companies surveyed 57% commented on environmental issues in their annual report, 25% produced separate environmental reports and 21% made no comment whatsoever on environmental issues. The level of data on environmental performance varied between the countries — only 4% of UK and 6% of Canadian companies provided detailed information compared with 25% of those in the US. The report concludes that environmental reporting is still in its infancy.

EC NETWORK FOR POLLUTION INSPECTORATES

The industrial pollution control agencies of the 12 EC countries have agreed to form a Network of Environmental Enforcement Authorities. Four working groups will compare approaches to per-

mitting and enforcement. The move follows a study by Environmental Resources Limited which highlighted wide variations between systems and practices in the EC countries. The official aims of the network are to "provide a mechanism for the exchange of information and experience between environmental enforcement agencies in the EC, in order to address issues of mutual concern and to enhance the quality of enforcement".

PASSIVE SMOKING AT WORK

The Health and Safety Executive has published a new edition of its booklet on workplace smoking. It recommends that all employers, after consultation with employees, should develop and implement a policy on smoking in the workplace. Non-smoking should be regarded as the norm in enclosed spaces, with special provision made for smoking, rather than vice versa. Government policy is to control smoking by voluntary means and this appears to be working. In 1982 20% of companies had formal smoking policies, by 1989 80% of large companies had created non-smoking areas. *"Passive Smoking at Work"* is available free from HSE leaflet line Tel: 0742 892346.

NEW ASBESTOS REGULATIONS

Two new sets of regulations came into force on 1 January 1993. The *Asbestos (Prohibition) Regulations 1985* are replaced by the *Asbestos (Prohibitions) Regulations 1992* and implement new EC restrictions, prohibiting crocidolite and amosite. *The Control of Asbestos at Work (Amendment) Regulations 1992* require employers to prepare work plans for asbestos removal and place greater emphasis on preventing exposure to asbestos.

Revised editions of Health and Safety Commission Approved Codes of Practice *"The Control of Asbestos at Work"* and *"Work with Asbestos Insulation, Asbestos Coating and Asbestos Insulating Board"* are to be published soon.

WATCH YOUR WASTE WEEK

A recycling awareness week has been announced by the Department of the Environment and Waste Watch. From the 18-25 March events throughout the country will promote the use of existing recycling and collection facilities and the reuse of materials. Further information from Waste Watch on 071 383 3320.

ROADSIDE VEHICLE TESTING

In answer to a parliamentary question put by Joan Walley MP, the Transport Secretary set out targets for roadside vehicle testing. Over 1992/3 the Department's examiners should make visual assessments of 125,000 heavy goods vehicles, 23,000 public service vehicles and 33,000 cars and light goods vehicles. Metered checks of smoke and CO should number 13,000.

There were no targets set for dealing with excessive noise due to inadequate silencers, even though road vehicles are the most significant source of noise in the UK. There is currently no agreed roadside testing method for vehicle noise.

DEROGATION FOR NON CATALYST CARS

The Government is to allow motor manufacturers to sell 32,000 cars without catalysts after 1 January 1993. This move comes in spite of the introduction of EC emission control legislation, of which manufacturers were aware well in advance.

BOOKS AND REPORTS

DIRECTORY OF ENVIRONMENTAL CONSULTANTS

1992/93 Third Edition. Environmental Data Services Limited, 1992. £49.50. ISBN 0907673066.

A directory of 339 organisations offering environmental consultancy services in the UK, providing detailed information on specialisations and client groups. The directory includes a quick reference guide and advice on choosing a consultancy. Purchasers of the directory will be sent updated information in autumn 1993.

TOWARDS GOOD ENVIRONMENTAL PRACTICE

J. Hill, Institute of Business Ethics, 1992. £20.00. ISBN 0951367188.

Environmental awareness in the business community is increasing, and ethical environmental policies are being demanded by the public. The purpose of these case studies is to show how to translate awareness into action. Nine companies, spanning a range of activity and size are examined. It is hoped that this study will benefit others by enabling them to share experience as well as providing inspiration.

TOXIC TORTS

C. Pugh, M. Day, Cameron May, 1992. £46.00. ISBN 187469800.

Written by practising specialists in environmental and health and safety law, this book looks at the expanding field of toxic torts — claims where individuals, property or the environment have suffered damage or injury as a result of environmental pollution. It cites examples that point to the complexity and expense of such cases, and provides a step by step guide to conducting an action — from commencing and funding a claim through to obtaining appropriate evidence and the legal remedies available.

INDUSTRIAL ENVIRONMENTAL SERVICES DIRECTORY 1993

Information for Industry Ltd, 1992. £59.00. ISBN 0951837516.

A compendium of over 2900 contacts in pollution control and environmental protection. Companies and organisations are listed by region and by specialisation, with a Classified Guide and a Who's Who.

HANDBOOK OF RADON

S.J. Wozniak, 1992. £14.00. ISBN 0951982508.

Written by a consultant specialising in building health and environmental issues, the handbook covers topics central to the radon controversy in the UK and USA. It examines monitoring and exposure, remedial measures and policy implications.

LESS TRAFFIC, BETTER TOWNS

Friends of the Earth, 1992. £10.95. ISBN 1857501209.

An illustrated guide to traffic reduction for local policy makers, providing an overview of the potential for traffic reduction in urban areas. With statistical information and examples in the UK and Europe, it identifies issues, options and solutions to the traffic problem.

SICK BUILDING SYNDROME: A REVIEW OF THE EVIDENCE ON CAUSES AND SOLUTIONS

G.J. Raw, HSE, 1992. £25.00. ISBN 0118863649.

This research, carried out by the Building Research Establishment, looks at current knowledge on the causes and effects of sick building syndrome. It cites a range of factors that may contribute to the syndrome, but concludes that despite extensive research the problem is unlikely to be eradicated in the short term.

WASTE MANAGEMENT LAW A Practical Handbook

J. Garbutt, Chancery Law Publishing, 1992. £24.99. ISBN 0471936669.

A short guide to the range of new and existing legal provisions affecting waste management — up to 1 April 1992. However, the author is aware of ongoing changes in the law and has anticipated them where possible. Intended for waste managers and their advisors, planning, environmental control and health and safety law are covered.

MAASTRICHT AND THE ENVIRONMENT

B. Verhoeve et al, IEEP, 1992. £10.00. ISBN 907409502X.

This book seeks to unravel what ratification of the Maastricht Treaty would mean for EC environmental policy. It examines the changes that could be made, discusses the concept of subsidiarity, and the extent to which Member States would be able to pursue their own policies.

CHARACTERISATION OF AIR QUALITY, BS 6069 SECTION 4.3: 1992, ISO 9096: 1992

Available from BSI Standards, Linford Wood, Milton Keynes MK14 6LE.

Method for the manual gravimetric determination of concentration and mass flow rate of particulate material in gas-carrying ducts, which is identical with ISO 9096: 1992.

ATLAS OF THE ENVIRONMENT

G. Lean, D. Hinrichsen, Helicon, 1992. £12.99. ISBN 0091774330.

Data from the 1980s and 1990s has been compiled in collaboration with WWF to produce an at-a-glance guide to environmental degradation. It covers population, urbanisation, health, education, energy and resources and pollution.

WORLD DIRECTORY OF ENVIRONMENTAL ORGANISATIONS

Fourth Edition, Ed. T.C. Trzyna, R. Childers, California Institute of Public Affairs, 1992. £35.00. ISBN 0912102977.

A handbook of organisations and programmes concerned with protecting the environment and managing natural resources. It covers national and international governmental and non governmental organisations, and these are classified by their concerns and regions they cover.

DANGEROUS SUBSTANCES IN WATER
A Practical Guide

ENDS, 1992. £53.00. ISBN 0907673058.

A comprehensive guide to the complexities of environmental legislation governing dangerous substances in water. It looks at the origins and development of UK, North Sea and EC law, the practical implications of legislation, and assesses future trends. An invaluable and accessible guide.

FROM REGULATIONS TO INDUSTRY COMPLIANCE: BUILDING INSTITUTIONAL CAPABILITIES

UNEP, Technical Report 11, 1992. 200F. ISBN 928071342X.

This manual is aimed at providing regulators with guidance on building institutional capabilities to implement environmental laws in industry. Using examples of the controls and experiences of various countries, it looks at policy planning, setting standards and enforcing them.

BIOLOGICAL INDICATORS IN ENVIRONMENTAL PROTECTION

Ed. M. Kovacs, Ellis Horwood, 1992. £39.50. ISBN 130849898.

This book demonstrates how living organisms are used to detect the presence of pollutants. It presents recent results of research in the field and provides a review of plant and fungus species for the detection of pollution and the physiological, cytological and histological changes used in bioindication.

GLOBAL WARNING GLOBAL WARMING

M.A. Benarde, Wiley, 1992. £24.50. ISBN 0471513237.

This book sets out to provide an accessible and comprehensive examination of the global warming issue. It looks at seasonal and atmospheric factors, potential effects and reasonable solutions.

FUTURE EVENTS

22 FEBRUARY — ASSESSING THE IMPACT OF GOVERNMENT AND REGULATORY REVIEWS OF ELECTRICITY GENERATION AND SUPPLY
This conference covers a run-down of current coal developments and how they affect the electricity supply industry, an insight into the outcome of recent OFFER reviews, opportunities for independent power generation and the latest views on prospects for competition in electricity supply.
Venue: Regents Park Marriott, London NW3.
Details: IIR Ltd. Tel: 071 412 0141.

24 FEBRUARY — LOCAL AIR QUALITY MANAGEMENT — THE WAY FORWARD FOR THE UK
A development workshop to discuss possible ways forward for local air quality management in the UK.
Venue: National Exhibition Centre, Birmingham.
Details: NSCA. Tel: 0273 326313.

2 MARCH — VOLATILE ORGANIC COMPOUNDS
Speakers from industry will discuss the benefits of process change and different abatement technologies, Warren Spring Laboratory will discuss monitoring of emissions and environmental data management after application.
Venue: Inn on the Park, London, W1.
Details: Liz Hide, IBC Technical Services Ltd. Tel: 071 637 4383.

9-10 MARCH — INDUSTRIAL WASTE WATER TREATMENT
This conference sets out the current position with respect to rapidly changing legislation and puts forward solutions for industrialists — supported by the experience gained in their application through a number of case studies.
Venue: Sandown Exhibition Centre, Esher.
Details: Amanda Wright, IBC Technical Services Ltd. Tel: 071 637 4383.

16-17 MARCH — GROUNDWATER POLLUTION
The conference will examine investigation, monitoring and remediation of groundwater pollution incidents and provide participants with up-to-date coverage of issues currently causing concern in the UK.
Venue: Royal Lancaster Hotel, London W8.
Details: Jane Worman, IBC Technical Services Ltd. Tel: 071 637 4383.

23-24 MARCH — WASTE MANAGEMENT — NEW APPROACHES, NEW PRIORITIES
The workshop will examine the practical implications of new policies, arrangements

and targets which are being introduced as we progress with implementation of Part 2 of the *Environmental Protection Act*, and the creation of an Environmental Agency against the background of the challenges of the Environmental Action Programme on hazardous and municipal wastes.
Venue: Lincoln College, Oxford.
Details: NSCA. Tel: 0273 326313.

29-30 MARCH — BUILDING PARTNERSHIPS FOR THE ENVIRONMENT
The third AMA conference will concentrate on the creation of partnerships with government, business and the voluntary sector to promote sustainable development.
Venue: The Queen's Hotel, Leeds.
Details: Events and Promotions Unit, AMA. Tel: 071 227 2913.

30 MARCH-2 APRIL — MUNICIPAL WASTE COMBUSTION
The Conference will provide a forum for exchanging information on technical, economic, regulatory and social issues on municipal waste combustion and ash treatment, use and disposal, as well as integrated management.
Venue: Hilton National Conference Centre, Williamsburg, Vancouver.
Details: Martha Swiss, Air & Waste Management Association. Tel: 412 232 3444 ext. 126.

7 APRIL — BUSES AND THE ENVIRONMENT
A meeting hosted by Trent Transport with presentations by the Engineering and Marketing Directors of the company and tour of the workshop.
Venue: Derby University
Details: David Romaine, East Midlands Division NSCA. Telephone: 0332 255228.

19-23 APRIL — INDUSTRIAL AIR POLLUTION MONITORING
A course covering currently available techniques for emissions monitoring, and the associated issues of quality control, data handling and management of sampling programmes.
Venue: University of Leeds.
Details: Julie Charlton, University of Leeds. Tel: 0532 332494.

3-7 MAY — MEASUREMENT OF TOXIC AND RELATED AIR POLLUTANTS
An international symposium covering air measurement and monitoring techniques.
Venue: Omni Hotel and Convention Centre, Durham, N.C.
Details: Martha Swiss, Air & Waste Management Association. Tel: 412 232 3444 ext. 126.

11-13 MAY — INTERNATIONAL ENVIRONMENT '93 EXHIBITION CONFERENCE
Environmental Science Exhibition and Conference, established since 1980, attracts delegates, visitors and exhibitors from around the world.
Venue: Wembley Exhibition and Conference Centre, London.
Details: Labmate Ltd. Tel: 0727 55574.